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Edited by

R. F. HARROD and E. A. G. ROBINSON

Assisted by R. C. O. MATTHEWS

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THE ECONOMIC JOURNAL

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THE RECESSION OF 1948–49 IN THE UNITED STATES

I

THE major cyclical upswing which began in late 1945 and early 1946 was interrupted in the Fall of 1948 by a minor recession, one which may be characterised as an inventory recession. That the decline in national income was dominated by the behaviour of investment in inventories is revealed by the radical change in this form of investment from a positive value of $6·5 billion in 1948 to a negative value of $—3·7 billion in 1949. In some contrast, 1949 gross private investment in producer durables and building construction fell but $1·4 billion below its 1948 rates. The present paper is devoted to the effort of fixing the roots and origins of the inventory recession of 1948–49, and the bases for the termination of the recession and the renewal of the major upswing in the summer of 1949.

The recession began in the Fall of 1948. Widespread cutbacks of new orders began in October, and continued at an accelerated rate until February 1949. In November the Federal Reserve index of total industrial production began a decline which continued through to (and including) July of the following year; all together the decline in this index amounted to 34 points. Department store sales fell 22% in the same period, although these never regained their 1948 levels until the outbreak of the Korean War. The wholesale price and cost of living indexes fell 12 and 5 points respectively; these, however, continued to fall slightly for about six months after the recession ended. Unemployment increased from the bare minimum of about 2 million workers to a figure which approximated 3·5 millions; this was about 5·5% of the labor force. Hourly wages, however, not only did not fall, but rose slightly, real hourly wages in manufacturing industry rising some 2·6 cents during the recession.

II

Three important areas of the economy must be made to share the responsibility for the recession. These were a decline in the ratio of total consumption to national income and a sharp decline in the rate of growth of consumption, a policy of monetary restriction carried out by the Treasury and Federal Reserve System, and a sharp and abrupt decline in the country's merchandise export trade. These factors have been listed in their order of importance as they appear to the present writer. In discussing them, however, we shall reverse their order, for purposes of emphasis.

Undoubtedly playing an important role, of which cognisance must be taken, was the $2·5 billion decline in the volume of merchandise exports. The decline set in at the very start of 1948. That it clearly provided a sharp jolt to the domestic economy of the United States will be realised when note is taken of the fact that the year before had seen a $4·2 billion increase in the level of merchandise exports. The reasons for the reductions are, of course, to be found in the rapid strides toward recovery Europe began to make under assistance from the Marshall Plan and by dint of good hard work at home. Part of the explanation also lies in the difficulties many European countries were having in obtaining dollar exchange; moreover, what exchange they did get was subject to reductions in purchasing power by the price inflation in process in the United States.

While this factor unquestionably provided a sharp deflationary influence on the economy, we must assign it a secondary role. The principal reason is that the amount of decline in exports was too small a fraction of gross national product of the United States economy to be assigned more than a minor role in the explanation of the cyclical movement in the latter, particularly when there were other forces at work which, in the opinion of the present writer, at least, appear to have exerted a much stronger influence on G.N.P. This opinion finds some support in the fact that the recession was over by the end of July 1949, and the major upswing resumed in the second half of the year, despite the fact that exports fell $1·4 billion below their value for the first half of the year, a decline which exceeded by $0·9 billion a similar decline in exports in the second half of 1948. Nevertheless, in the presence of other deflationary influences during 1948, there is little doubt that the sharp fall in the nation's export trade exerted a damping (though short-run) influence on businessmen's expectations.

III

A close follower of Mr. Hawtrey's theories might be tempted to point to the development of certain restrictive monetary and fiscal policies as the major source of the contraction. Certainly, there was a strong coincidence of timing between the beginning of the recession and the attempts to tighten credit conditions on the part of the Federal Reserve System and the Treasury. The latter utilised an $8 billion cash surplus largely to retire $8 billion of marketable debt, the bulk of the retirement occurring in the first quarter of the year; some 70% of the amount retired was held by the Federal Reserve System. Rates on short-term Federal securities rose between $\frac{1}{8}$% and $\frac{3}{8}$%. In February and June and again in September, reserve requirements were raised 2 percentage points. The first two actions increased reserve requirements about $1 billion, forcing the banks to sell government securities to the Federal Reserve in order to acquire these additional reserves. The September actions, however, were designed to *offset* an increase in bank reserves deriving from an inflow of gold of $1 billion (between February and October) and sales of government securities to the Federal Reserve System by non-bank holders of governments. Rediscount rates at the Reserve Banks were raised 0·50% between January and August, at which time they stood at 1·50%. Finally, and perhaps most important, consumer credit controls were reimposed in September.

The primary effect of these actions on the banking system was a $6·5 billion reduction in its holdings of government securities. Excess cash reserves actually rose $200 million. The structure of interest rates rose fractionally. From March to December, customer rates rose between 0·18% and 0·30% around the country. Open market rates on prime paper rose between 0·13% and 0·25%. Moody's average yield for all corporate securities went from a low of 3·00% in June to a high of 3·12% in November. Stock yields rose from a low of 5·26 to 5·82%.

Certain factors point to a slackening in the rate of monetary expansion. The most conspicuous indicator of this is the decline in the rate of expansion of bank credit that took place in 1948. Whereas total loans (except those to consumers) at commercial banks increased some $5·2 billion in 1947, the rate of increase fell to $3·2 billion in 1948. Nevertheless, while the rate of expansion of bank loans in the second half of 1948 was considerably less than that of 1947, there were still sizeable expansions of business loans in August, September and October, the critical

months of the year. In these three months commercial, industrial and agricultural loans increased about $400 million, $250 million and $200 million, respectively.

It was in the area of consumer credit that the policy of monetary restriction hit hardest. Prior to September, bank loans to consumers had been expanding at the rate of approximately $80 million a month. After September, however, this type of bank lending abruptly ceased. Simultaneously, sales of consumer durables, which had been setting records during the first three quarters of the year, suddenly began lagging at an alarming rate. There can be little doubt that the abrupt change in the volume of consumer loans by banks and the sudden sagging tendencies of sales of consumer durables reflected to a large extent the reimposition of consumer credit controls by the Federal Reserve System.

With the exception of the last-mentioned measure, there exists the age-old question: to what extent did the decline in the rate of bank lending to business in 1948 reflect a tightening *supply* of credit, and to what extent did it reflect a shrinking *demand* for loanable funds, or the shifting of business borrowing to other sources?

The evidence seems to point to the latter two factors as reasons for the decline in bank lending. Lagging consumer sales, together with the resulting over-accumulation of inventories, provide the chief explanation for the shrinkage in the overall demand for funds by business. The analysis of this factor shall concern us exclusively in Section IV. In the meantime, we should like to take cognisance of certain factors which indicate a shift in the sources of supply of loanable funds to business, and still others which cast strong doubt on the effectiveness of the restrictive policies pursued by the monetary authorities.

In the first place, business, because of record high profits, was able to finance a larger portion of its investment programs out of reinvested profits than they had in the past. Thus in the face of these record profits, dividends were 10% and 13% less in the second and third quarters of 1948 than they had been in the corresponding quarters of the previous year.

In addition, a substantial amount of investment funds was obtained from flotations of securities to non-bank lenders. In the twelve-month period ending October 1948, life insurance companies, mutual savings banks, and savings and loan associations increased their outstanding credit to private borrowers by some $9 billion. Of this sum, $4·1 billion went to business firms.

About $4 billion of the funds for new private credits was obtained by the sale of long-term government securities which had been acquired during the recent war.[1] However, in November of this year, sales of governments to the Federal Reserve System by non-bank investors stopped, and they increased their holdings slightly. This change of events can be traced, for the most part, to a decline in the *demand* for funds from these institutions. Since they were apparently quite willing to continue their shifts in the make-up of their investment portfolios in the direction of private securities, it seems clear that other factors intervened to induce a decline in business demand for their funds.

The very smallness of the rise in the structure of interest rates is suggestive also. Few, if any, modern students of the business cycle would point to such a small rise in interest rates as an explanation of a fall in the demand for loanable funds. The arguments casting doubt on the importance of the interest rate as a determinant of investment are too well known to warrant discussion here. However, our skepticism of the significance of the rise in interest rates in 1948 is re-enforced by the rise in yields on long-term corporate securities in 1947, without any visible effect on corporate investment. Between July and November of 1947, Moody's average of yields on all grades of corporate bonds rose from 2·80 to 3·02%; similarly, the yields on corporate stocks rose from 4·9 to 5·4%. Thus the costs of long-term borrowed funds rose 8%, while the costs of equity funds may be said to have risen roughly 10%. The latter figures may be compared with the rise of 4% and 11% respectively in 1948. Because business expectations were buoyant in 1947, the rise in the costs of money had no effect on the business demand for funds. But because something happened to damp these expectations in 1948, the demand for loanable funds fell off.

More important, the limited increases in bank lending rates certainly do not reveal a sharp stiffening of attitudes on the part of the commercial banks. Earlier in the year these banks had shown little hesitancy in unloading government securities on the Federal Reserve System in order to expand their loans to the private sector of the economy, even though they had raised their loan rates somewhat. But although they received a substantial volume of new reserves in October as a result of con-

[1] These sales, incidentally, largely undid the work of the Treasury in retiring Reserve Bank-held debt in the first quarter of the year; because of their effects on bank reserves they were also primarily responsible for the further increase in reserve requirement which the Federal Reserve imposed in September 1948.

tinued Federal Reserve purchases of government securities from non-bank investors, these funds were used to rebuild the banks' holdings of short-term governments.[1]

It might be argued, with merit, that the commercial banks might have instituted a system of capital rationing, irrespective of changes in the rates of interest. However, what evidence there is on this matter lends no support to such a thesis. The attitude in the banking community toward the restrictive Federal Reserve policies was one of strong skepticism. Bank officials appear to have been confident that although loan rates would rise in consequence of higher reserve requirements and the resultant sales of governments to the Federal Reserve by the banks, business would hardly be deterred by modest increases in loan rates.

Even more significant was the fact that banks welcomed the rise in various loans rates as a source of increased earnings, which were deemed necessary because of rising operating costs. Banks which were concerned about their earnings cannot be expected to have become particularly more stringent in their borrowing requirements.[2] That the banks shared the writer's view may be seen in a statement in *Barron's*,[3] at the very end of the year, which noted that leading bankers felt that the decline in bank loans was associated " with a decline in business demand, rather than a tightening of bank credit policies . . ."

Thus, although the actions of the Treasury and Federal Reserve acted to reduce the liquidity of the banking system (through a reduction in its holdings of governments) and so reduced, to a certain extent, the lending power of the banks, we find this fact inadequate to explain the decline in the growth of bank loans. The major exception to this remark is to be found in the revival of consumer-credit regulations, which had been allowed to expire in November 1947. The closeness in timing of the sudden development of a declining tendency in the sales of consumer durables in the last quarter of 1948 and the reimposition of consumer credit controls is too great to deny

[1] Lest anyone construe this to mean that the banks were shifting into the higher interest-bearing (and safer) government securities at the expense of private loans, it might be pointed out that these purchases were part of a general tendency, of the public at large, to shorten the average maturity of their government security portfolios in response to a rise in yields on these shorts relative to those on long-term government securities.

[2] See *Banking* (November 1948), pp. 33, 34 and 116. *Barron's* (November 29, 1948), p. 5, commented specifically, at this time, on the ease with which credit could be obtained at the banks.

[3] December 27, 1948, p. 25.

an important degree of significance of the latter for the former. However, it would not be accurate to ascribe sole responsibility to consumer-credit controls for the decline in consumer-durable sales. Undoubtedly sharing to some extent in the responsibility for this turn of events were factors which were responsible for the decline in the rate of advance of sales of non-durable consumer goods much earlier in the year. These factors include such things as a decline in the savings and liquid-asset position of consumers and the catching up with deferred demand. Where backlog demand continued strong, as in automobiles, there seems to have been no decline in the rate of advance of instalment sale credit. Thus automobile instalment sale credit increased approximately the same amount during the month of October in 1948 as it had in the same month a year earlier.

IV

The most important explanation of the recession, in the opinion of the present writer, is an under-consumptionist one. The support for this view is to be found in the footnote below.[1] In 1948 gross national product rose some $27 billion over its level of the previous year. Yet the figures show that the ratio of consumption to G.N.P., which we may take as a crude measure of the average propensity to consume, fell 3 percentage points. This fact may be taken as an indication of a downward drift in the position of the consumption function from its immediate post-war peaks. At the same time the *rate of growth* of consumption fell 6 percentage points. This latter figure is especially significant, for it took place independently of the movement in

[1] Consumption and Investment 1945–49 (*Source :* Department of Commerce)

Year.	(1) Gross national product (in millions of dollars).	(2) Consumption (in millions of dollars).	(3) Net business capital formation, exclusive of changes in business inventories (in millions of dollars).	(4) Net changes in business inventories (in millions of dollars).	(5) Ratio of consumption to gross national product.	(6) Rate of growth of consumption.
1945	215·2	123·1	− 2·9	−0·7	0·57	0·10
1946	212·6	147·8	+ 5·1	+6·7	0·70	0·19
1947	235·7	166·9	+ 8·9	+0·07	0·71	0·13
1948	262·4	177·4	+11·3	+6·5	0·68	0·07
1949	255·6	178·8	+ 6·9	−3·7	0·70	0·008

national income, the fall in the rate of growth of consumption occurring in the face of a *rise* in national income (at a slightly higher *rate* than that of 1947). The result was a sharp rise in the rate of inventory accumulation, one which, in the light of other factors, we can assume to have been considerably of the unplanned variety, especially in the late months of the year. The reason, of course, was the levelling of consumer demand. As early as January 1949, the *Survey of Current Business* (Department of Commerce) saw fit to devote considerable space to a discussion of the change in the rate of consumer spending, to note carefully the sagging tendencies in retail trade, particularly, in the last quarter of 1948. Sales of non-durable consumer goods had shown a marked decline in their rate of increase all during the year. In the last quarter, however, the trend also began to affect noticeably purchases of consumer durables (except automobiles). A marked shift in the composition of inventories during the year in favor of finished commodities was noted. A greater than seasonal drop in retailers' orders to manufacturers at the start of the year was also important enough to deserve special mention.

The skeptics may remain unconvinced. They will assert that the figures show that the rate of growth of consumption declined by 6 percentage points in 1947. Why, then, did not a recession occur in 1947? The answer to this query is not difficult to find. The piling up of inventories is, of course, not always deflationary; it depends on whether such investment is of the planned variety. It depends also on the state of the ratio of inventories to monthly sales; if this ratio is well below the figure which businessmen are accustomed to maintain, even unlooked-for inventory accumulation will not necessarily be deflationary. One indication of the situation in 1947 and 1948 may be gleaned from a comparison of the ratios of inventories to monthly sales of the post-war years with those of the pre-war years. These and related ratios are shown in Table I. The average for the ratio of total retail inventories to total retail sales during the month of October in the pre-war years was about 1·57; in October 1948 this ratio was 1·37, an increase of 13% over its value during October 1947, but apparently still significantly less in value than its pre-war average. The ratio of *total* inventories to *total* sales, however, does not give too accurate a picture of the behavior of consumer outlays and inventory accumulation during 1948. The reason for this is that it is considerably influenced by consumer durables, the

sales of which held up quite well during most of 1948—until the imposition of consumer credit controls. In fact, durable goods sales increased some 20% in 1948, and constituted over half the increase in consumer expenditure in this year.

TABLE I

Business Inventories and Sales—Pre-war and Post-war *

Period : Month of October.	(1) Ratio of total retail inventories to sales.	(2) Ratio of total retail *non-durable* inventories to sales.	(3) Ratio of total wholesale *non-durable* inventories to sales.	(4) Rate of change of retail non-durable sales by quarters, December 1946–October 1948.
Average :				
1939–41 .	1·55	1·36	1·01	Dec. 1946–March 1947 +0·02
1946 .	1·19	1·14	0·81	March 1947–June 1947 +0·03
1947 .	1·21	1·08	0·94	June 1947–Sept. 1947 +0·03
1948 .	1·37	1·25	1·08	Sept. 1947–Dec. 1947 +0·03
				Dec. 1947–March 1948 −0·001
				March 1948–June 1948 +0·02
				June 1948–Oct. 1948 −0·005

* *Source : Survey of Current Businesses* (October 1950). This material contains monthly data only as far back as 1945. Pre-war monthly data is available upon request to the Bureau of Business Economics of the Department of Commerce.

On this account, it seems better to compare the ratio of non-durable inventories to non-durable sales in the pre-war and post-war periods. In the month of October in pre-war years, the value of this ratio for retailers averaged about 1·36; its value in October 1948 was 1·25, an increase of some 16% over its value of October 1947. In the same interval, the value of this ratio for wholesalers rose 15%, reaching a value of 1·08 in October 1948, compared with an average of about 1·01 for this month in the pre-war period.[1] It appears that by October

[1] Unfortunately, monthly figures on pre-war ratios of inventories to sales of manufacturers are not yet available, so that it is difficult to make similar comparisons of these ratios with those of the post-war period we are considering. However, annual figures for sales and inventories are available, and it has seemed worth while to get some rough idea, at least, of pre-war ratios of manufacturers. Hence an ordinary monthly average was derived from total annual sales in the pre-war years, with the annual increments interpolated on a straight-line basis. The results show the ratio of non-durable inventories to sales to have been roughly 1·74. This may be compared with the figure of 1·65 for this ratio in October 1948, with the latter figure representing a 15% rise over its value of the previous year.

Some writers feel the ratio of manufacturers' inventories to new *orders* to be a sensitive indicator of cyclical movements, because of the close relationship between (presumably, short-run) business expectations and new orders. However, because of the radical revisions undergone in post-war manufacturers'

1948 ratios of inventories to monthly sales in soft goods had risen to values closely approximating their pre-war figures. Undoubtedly adding to the discomfiture of businessmen, and, it is not unreasonable to assume, being responsible for a certain amount of unplanned inventory accumulation, was the sharp fall in the rate of increase of retail sales of non-durable consumer goods during 1948, particularly in the crucial third quarter of 1948. For the year as a whole such sales increased some 6% above their dollar value of the year before. But whereas their average quarterly *rate* of increase in 1947 approximated 3%, this figure dropped to less than 1·5% in 1948. During the third quarter of 1948 the rate of change of retail sales of non-durables fell from a positive figure of 2% to a negative one of −0·5%.

Thus it is clear why the 6% decline in the rate of growth of consumption did not precipitate a recession in 1947, but did so in 1948. The decline in this variable in the former year permitted businessmen to build up their inventories to a level which approximated their pre-war relationships to monthly sales. By the middle of 1948 this had been pretty much accomplished. Hence with the continued decline in the rate of growth of consumption, finally culminating in an actual fall in the absolute volume of retail (non-durable) sales, there was good cause for alarm and possible retrenchment, at least in inventory investment. To these remarks should be added those made earlier in connection with the effects of consumer credit controls. It is not unreasonable to suppose that businessmen became additionally fearful that the reimposition of these controls would add to the downward movements in retail sales that had set in sharply earlier in the year, as, in fact, they did.

The reasons for the decline in the consumption function and the rate of growth of consumption need little in the way of elaboration. In the first place, it is clear that the backlog of consumer demand was rapidly being filled by the end of 1948. In addition, efforts of consumers to satisfy long-deferred wants led to a rapid depletion of war-time savings. At the same time, the 43% rise in the cost-of-living index since the end of the war had greatly speeded up the reduction of these savings. By the

series, it is impossible to compare these with their pre-war counterparts, in this case, too. The Commerce Department, which has been revising its series back to 1939, has not yet made available its revised monthly series on manufacturers' new orders, as well as those previously mentioned. It is noteworthy, though, that the post-war ratio of manufacturers' inventories to new orders behaved in quite the same way as the other ratios discussed, rising from 0·99 to 1·15 in the year ending October 1948, a rise of 16%.

end of 1948, they had rapidly been exhausted. These two developments combined to produce a drop in the position of the consumption function from its abnormally high post-war levels. People were now regulating their consumption expenditures more closely in accord with their current incomes now that their war-time savings were gone. And they were able to do this without discomfort, because their most pressing needs had been satisfied in the preceding years. The result was that even though consumer *disposable* income continued to *rise* well above its levels of 1947 (because of reduced personal income taxes, State veterans' bonuses and higher wage and salary payments), the rate of increase of consumer outlays fell sharply, along with the fall in the consumption function itself.[1]

V

If now, the question is asked, why didn't a major downswing develop out of the inventory recession, the answer lies (just as it did during the two minor inventory recessions of the twenties) in a strong and increasing rate of autonomous investment, with an extraordinary amount of stimulus being provided by expanded government (deficit) spending. In the private sectors of the economy, the principal sources of stimulus were provided by the residential construction and automobile industries.

During 1948 and 1949 the residential construction industry underwent a tremendous expansion, just as it had in the period following the First World War. The shortage of housing was, of course, extreme, and the demand for housing was given further impetus by the very easy conditions of real estate credit, particularly in the case of G.I. housing loans by the Federal government. Even during the recession the rent index rose 2·7 points, giving evidence that the demand for housing continued strong. Thus where business construction declined in volume some $0·2 billion below its 1948 level in 1949, residential construction rose $1·4 billion.

In similar fashion, the production of automobiles continued to expand in the face of declines in production of all other consumer durables. This industry had been faced with bottlenecks since the end of the war, mainly as a result of steel shortages. The result was that the backlog of demand for automobiles had still gone unsatisfied to a large extent by the end of 1948. In

[1] This is not to say that the latter was basically responsible for the former. The fall in the consumption function resulted in a fall in the rate of growth of consumption because G.N.P. rose at the same rate in 1948 as it had in 1947.

fact, the banner production of cars in 1949 topped all previous records in the history of the automobile industry. Much of the demand for cars represented a long-deferred replacement demand, as in the cases of producer durables and other consumer durables. In addition, however, it undoubtedly represented an important part of the secular rise in the long-run consumption function, a symbol of the nation's adjustment to higher living standards.[1]

Of extreme importance in terminating the recession was the sharp expansion in government spending (at all levels) in 1948, which was equal to (perhaps greater than) the importance of the above-mentioned factors as a source of stability during the recession. Federal, State and local governments combined, after showing an aggregate surplus of $8·5 billion in 1948, incurred a deficit of $3 billion in 1949. Most of this stabilising influence came from the Federal Government. The most significant aspect of this development was the $6·6 billion rise in Federal outlays over the levels of 1948. Chief among the reasons for the expansion in Federal spending were increased military spending, a great expansion of foreign aid in connection with the European Recovery Program and agricultural price-support activities. However, there was also an expansion of $2 billion in the volume of total purchases by state and local governments, with the bulk of the latter going into programs of public construction. The $8·6 billion increase in expenditures by the various levels of government create strong grounds for ranking government spending, at the very least, on a par with the aforementioned factors as an autonomous stabilising investment influence.

Finally, we might mention actions of the Federal Reserve System, aimed at ending the policy of monetary restriction invoked in the early months of 1948. Between May 1 and September 1, reserve requirements at all member banks were reduced 4 percentage points. There followed a moderate decline in yields on government securities, which had the effect of making such securities a less attractive alternative to business and other

[1] These factors had the effect of giving to the automobile industry the (misleading) appearance of being a source of autonomous investment. Nevertheless, this was, and is, not the case. Even the (secular) upward shift in the consumption function indicates nothing of the sort. It merely signifies the adoption of the automobile, more than ever, as an integral part of the American standard of living. In the end this will mean only a greater dependence than ever of the automobile industry on the level of national income. As a matter of fact, the extreme importance of this durable-consumer-good industry in the modern economy will, *ceteris paribus*, add to the latter's instability.

loans, and, together with the overall increase in the liquidity of the banks, was undoubtedly conducive to easy lending policies by the banks. Average rates on short-term commercial loans, however, fell only slightly—from a peak of 2·74% (reached in June) to a low of 2·63% during the remainder of the year. Open-market rates on prime paper likewise fell but little, declining from a high of 1·19% to a low of 1·06%.

There was an expansion of business loans of about $1·0 billion in the last five months of the year. However, it would appear quite definite, from the tiny reduction in the structure of interest rates and the absence, most assuredly, of capital rationing by the banks, that this expansion was largely the product of an increase in the demand for funds arising independently of the policy of monetary ease.

In addition, the re-emergence of seasonal patterns in the volume of outstanding consumer instalment credit during the first two months of the year prompted the Federal Reserve to ease consumer credit restrictions, and at the end of June these cease[d] altogether. The result was an immediate jump in the average monthly rate of expansion of total instalment credit, the average rate rising from $137 million monthly at the end of 1948 to $295 million monthly during the last half of 1949. Allowing for other influences, it would appear that the relaxation to consumer credit controls was a salutary influence on the economy during its period of readjustment, which is worthy of note.

VI

In closing, the writer would like to venture a few remarks on the post-war economy, which have some bearing on the controversy involving the stagnation thesis. Something that impresses a reviewer of post-war business-cycle developments is the apparent lack of new manufacturing industries leading the way in the post-war expansion. Between the end of the war and the middle of the third quarter of 1949, when the television industry underwent a tremendous expansion, there appears to have been no new or comparatively new manufacturing industry with outlets for autonomous investment on a scale comparable to the investment ramifications arising out of the automobile industry in the twenties. Looking over the leaders in industrial output, one sees much the same industries leading the way. True, there was a tremendous expansion in consumer durables, and many of these, like washing-machines and home

freezers, might be classed as new (in terms of the great increase in the number of new users). But, on the whole, the great demand for most consumer durables seems to have been the product of a vast accumulation of war-time savings and the post-war adoption of many of them into the category of household necessities, plus the great accumulation of deferred demand carried over from the war period and beyond. It may be said that the vast purchases of consumer durables, including automobiles, represent in the main, efforts to make up for long-deferred replacement needs plus the normal, long-run rise in the living standards of the nation, the latter taking the form of a secular, upward shift in the position of the consumption function.[1]

The significance of the foregoing is that, except for residential and perhaps public utility, construction, there appears to have been a lack of *autonomous* investment, particularly the type emanating from some great innovation(s). On the contrary, if the above analysis is correct, a distressing amount of investment appears to have been of the "*induced*" variety, signifying that it will tend to be functionally related to the level of national income, instead of being independent of and *leading* the latter. This would bode ill for the future (in a non-military economy), barring an unforeseen, swift rise in the consumption function.

The difficulties of corroborating such a thesis are obvious. The most important obstacle to corroboration is the extremely high rate of government spending. With its great emphasis on military outlays and foreign aid, government spending has, of course, been autonomous, too. It is extremely difficult to tell what the behaviour of the economy would be (or have been) without the rate of government spending entailed by the so-called garrison economy, but there are some interesting questions to be raised concerning it.

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[1] Or, if the reader prefers, *à la* Duesenberry, we may take the secular rise in the consumption function to represent the workings of the "demonstration effect" plus a dose of the Veblen effect.

CHANGES IN THE PRODUCTIVITY OF BRITISH INDUSTRY, 1945–50

I. The Nature and Significance of Productivity Estimates

In the past, estimates have been made at infrequent intervals of changes in the productivity of labour in the national economy as a whole and in its various branches. Such estimates, covering a long period and thus averaging good and bad, normal and abnormal years, yielded useful crude indicators of the economic progress made, in spite of the unsatisfactory character of the statistical data on production and employment underlying these estimates.

With the increasing application of national-income analysis as a tool for determining economic and fiscal policy, the need for and the importance of estimates of changes in productivity have greatly increased. They are now increasingly used for purposes of forecasting national income and output, occupational shifts, labour requirements and so on. This note examines briefly the significance of these productivity indexes; it indicates what light they throw on changes in productivity in British industry in the post-war period and points to some of the factors responsible for such changes.

Two types of productivity estimates can be compiled on the basis of existing (secondary) sources of information on production and employment: global estimates for the economy or manufacturing industry as a whole and estimates in selected closely defined industrial sectors. The most frequently quoted two global estimates are changes in real product per head (or per man-hour) and changes in output per head in industry.

(i) *Real Product per Head*

The general meaning of the concept of real product per head or per man-hour is clear. It indicates changes in the physical volume of output per head or per unit of labour time in all branches of the national economy. Such an index has the great advantage of being comprehensive and also relates to the net product. Its shortcoming is that the most complicated conceptual problems, namely, the measurement of productivity in the service industries or in the Government sector remain unsettled and are solved in a

rough-and-ready fashion according to the way in which the real product is computed, *e.g.*, if the method is that of deflating by an appropriate price index the four important components of the gross national expenditure, physical output of the distribution and service industries is being measured by the value of turnover at constant prices divided by the number of employees or of total man-hours worked. This implies, *e.g.*, that with a given labour force shops having a higher total of sales or cinemas filled nearer to capacity have a higher productivity. As far as Government expenditure on salaries and wages or payment of the Armed Forces is concerned, the same method of computation implies constant productivity.

Productivity estimates of this kind, although departing radically from the technical concept of productivity, are nevertheless of use for such purposes as projecting future national income and output. Projected future national incomes will be allocated between the four main uses, and for these purposes they will absorb physical resources in a manner which is not inconsistent with the productivity concept underlying the calculations. Only when resources are suddenly shifted from one use to another will this method be misleading. It should also be added that the computation of an index of real product per head involves several statistical difficulties, of which the lack of reliable price data for purposes of deflating is usually the most important one.

(ii) *Output per Head in Industry as a Whole*

Global indexes of output per head or per man-hour in industries producing physically measurable goods, such as manufacturing, mining, building and contracting, and public utilities (broadly the Census of Production industries), as given in Table I, do not pose conceptual problems of the same complexity. Nevertheless, the methodological problems of measurement are complicated. For measuring the movement of industrial production we invariably sample the movements of the output of a usually large number of products. This method gives an entirely satisfactory answer for the purpose for which such indexes were originally used, *e.g.*, by W. C. Mitchell in his *Business Cycles* of 1913, namely that of a barometer of the trend of business and of business fluctuations. They remain, however, an imperfect indicator of the exact extent of such movements. They will seldom indicate accurately changes in the work content of the industrial output which might be caused by quite small shifts in the product structure within an industry or, *e.g.*, by shifts in the ratio of stocks to finished products.

Both types of global indexes have the advantage that they reflect shifts within the economy and industry, as well as changes in productivity in the technical sense. In normal times shifts

TABLE I

Estimated Changes in Output, Employment and Productivity in British Industry

(1946 = 100)

	1947.	1948.	1949.	1950.	1951.[1]
All industries covered by the interim index of industrial production :					
Output	108	121	129	140	144
Employment . . .	108	111	112	115	117
Ratio of output to employment	100	109	115	122	123
Manufacturing industries :					
Output	109	123	132	145	150
Employment . . .	107	110	112	115	118
Ratio of output to employment	102	112	118	126	127

Source : Based on official statistics.
[1] January–October.

and the re-allocation of resources between various industries are slow and gradual; usually they are also of permanent duration, and there is every reason to regard them from the national point of view as causing an increase in the national productivity.

(iii) *Output per Head in Individual Industries*

A second type of productivity index, based on secondary sources of statistics, relates to selected industries; examples are presented in Table II. These indexes are confined to rather small segments of industry, producing fairly closely defined and rather more homogeneous products. The products chosen as indicators of output usually cover a high proportion of the total output of the industry chosen, and the indexes are in most cases calculated in such a way that attention is paid to internal shifts of products within the industry. Nevertheless, these production indexes remain no more than approximate indicators of the movement of output for the purpose of measuring productivity. The employment indexes are derived from current labour force and social-insurance statistics, and are therefore subject to certain limitations in respect both of continuity and of compatibility with the output indexes used with them.

Productivity indexes derived from secondary sources are at all times approximate indicators only. In abnormal periods, *e.g.*, in a period of switch-over from war to peace or peace to war, a

TABLE II

Estimated Changes in Output per Head in Selected British Industries [1]

(1948 = 100)

	Trade.		1935.	1945.	1946.	1947.	1949.	1950.	1951.[10]
1	Coal	O [2]	122 (1937)	88	92	95	103	103	109
		E [3]	107	98	96	98	99	96	97
		OPH	114	91	95	96	103	107	113
2	Coke	O	91 (1939)	91	91	90	101	100	104
		E	86	88	92	97	101	101	101
		OPH	106	103	99	93	100	99	103
3	Pig-iron	O	70	77	84	83	102	104	103
		E	78	93	96	97	101	103	101
		OPH	89	83	87	85	102	101	102
4	Steel melting and rolling	O	84 (1937)	82	83	86	104	112	114
		E	86	94	93	96	101	102	102
		OPH	97	87	89	90	102	111	112
5	Tinplate	O	97	70	79	89	102	104	107
		E	134	80	85	96	101	101	93
		OPH	72	87	93	93	101	103	115
6	Steel wire	O	65	79	91	84	117	123	128
		E	73	98	102	99	101	101	100
		OPH	90	81	89	84	115	122	128
7	Steel tubes	O	84 (1939)	73	94	89	123	134	146
		E	90	97	97	97	107	112	113
		OPH	93	75	96	92	115	120	129
8	Iron foundries	O [4]	—	60	77	85	102	105	115
		E	—	69	81	94	100	100	102
		OPH	—	88	95	91	102	106	113
9	Non-ferrous metals	O	—	83	88	99	95	—	—
		E	—	98	93	104	96	—	—
		OPH	—	85	95	95	100	—	—
10	Cotton spinning and doubling	O	141–146	71	81	84	104	109	112
		E [4]	131	72	84	90	103	107	111
		OPH	108–112	99	97	93	101	102	101
10 (i)	Cotton spinning	O	—	69	82	84	105	109	111
		E [4]	—	71	84	89	105	108	112
		OPH	—	98	97	95	100	101	99
10 (ii)	Cotton doubling	O	—	79	79	82	100	107	115
		E [4]	—	78	84	93	99	101	106
		OPH	—	101	94	89	100	106	109
11	Cotton and rayon weaving	O	145	77	82	84	108	118	125
		E [4]	141	78	83	90	107	113	118
		OPH	103	99	99	94	101	105	106
12	Woollen and worsted	O	107	72	82	86	106	112	110
		E	117	74	83	94	103	105	104
		OPH	92	98	98	92	103	106	106
13	Hosiery	O [5]	98	63	78	92	—	—	—
		E [4]	108	63	78	92	—	—	—
		OPH	91	100	99	100	—	—	—
		O [6]	—	—	71	81	111	127	142
		E [4]	—	—	78	92	110	118	121
		OPH	—	—	91	89	101	107	118
14	Textile finishing	O	—	—	78	82	113	124	134
		E	—	—	83	94	105	112	114
		OPH	—	—	94	87	108	112	117
15	Leather [7]	O	—	—	—	—	103	102	104
		E	—	—	—	—	96	95	95
		OPH	—	—	—	—	107	107	110
16	Boots and shoes	O	105	75	85	91	103	99	106
		E [4]	117	74	86	95	106	106	106
		OPH	90	101	98	96	97	94	100
17	Utility furniture	O	—	31	83	91	128	141	172
		E [4]	—	34	84	97	128	146	155
		OPH	—	90	99	94	100	97	111

TABLE II—*continued*

	Trade.		1935.	1945.	1946.	1947.	1949.	1950.	1951.[10]
18	Linoleum and felt-base	O	128	38	69	65	116	118	109
		E [4]	132	34	65	75	112	120	123
		OPH	97	109	97	87	103	98	89
19	Brushes and brooms [6]	O	74	80	107	107	105	117	133
		E	67	72	88	99	94	95	96
		OPH	110	111	121	108	112	124	138
20	Domestic pottery	O	—	59	74	85	103	110	120
		E [4]	—	60	77	90	105	108	111
		OPH	—	98	96	94	99	102	108
21	Chocolate and sugar confectionery	O	150	84	91	109	136	141	160
		E	136	67	85	100	118	126	133
		OPH	110	125	107	109	115	112	120
22	Tobacco	O	74	116	118	107	100	100	106
		E	101	110	113	108	101	99	98
		OPH	73	105	104	99	99	101	108
23	Matches	O	86	91	98	93	95	—	—
		E [4]	111	103	101	99	96	—	—
		OPH	78	88	97	94	99	—	—
24	Paper and board	O	94	67	89	90	112	131	137
		E	93	74	90	98	103	106	109
		OPH	102	90	98	92	110	124	125
25	Cement	O	72	52	77	82	108	114	119
		E [4]	77	64	89	95	102	105	107
		OPH	93	81	87	86	106	109	112
26	Bricks	O	159	28	75	99	114	129	129
		E [4]	138	39	95	110	102	109	109
		OPH	116	73	79	90	112	119	118
27	Roofing and damp-proof course slates	O	205	73	86	78	96	93	87
		E [4]	188	77	95	95	92	91	89
		OPH	109	75	91	81	104	102	98
28	Salt glazed pipes and conduits	O	124	46	79	96	100	106	106
		E [4]	110	52	83	100	107	107	101
		OPH	113	87	95	96	94	99	105
29	Asbestos cement	O	—	—	86	91	96	99	122
		E [4]	—	—	97	98	93	88	91
		OPH	—	—	89	92	103	113	134
30	Gas	O	72 (1939)	84	94	97	102	107	—
		E [9]	94 (1939)	80	91	100	104	110	—
		OPH	77 (1939)	105	103	97	98	97	—
31	Electricity	O	57 (1939)	80	89	91	106	118	—
		E [9]	91 (1939)	71	83	94	106	115	—
		OPH	63 (1939)	113	107	97	99	103	—

[1] The basic data underlying these estimates are largely published data. Changes in production were estimated by linking the data collected in the pre-war censuses of production to current output figures collected by various production departments. Changes in employment were estimated on the basis of data of insured persons employed, and thus include salaried persons. In certain cases (as indicated) employment data collected together with the production figures were used; these relate to "operatives," mostly "at work," sometimes "on employers' books."

The major difficulty encountered in making these estimates was how to deal with changes in the quality of the product and with shifts in production towards products of higher or lower labour content. An allowance could not be made in all cases, and as the errors involved may cancel out, it is suggested that these estimates should be examined as a whole rather than with the object of establishing the exact change in any single industry.

[2] Saleable mined coal produced.
[3] Average number of wage-earners on the colliery books.
[4] Operatives only.
[5] Weight of yarn delivered weighted for different materials.
[6] Finished garments weighted.
[7] July–December 1948 = 100.
[8] 1935–47 estimates not strictly comparable with later years.
[9] Since nationalisation it probably covers a somewhat wider range of employees.
[10] January–June.

O = Output. E = Employment. OPH = Output per head.

large number of changes take place which have further bad statistical effects on the comparisons, *e.g.*, over the last ten years there have been large changes in the character and quality of output. There have also been changes in the composition of the labour force and in the quality and type of the materials used.

Also in abnormal periods temporary re-allocation and shifts in resources as reflected in global indexes might falsify the actual changes in productivity; demobilisation and re-absorption of the Armed Forces into industry would appear as a productivity increase, while drafting of workers from industry into the Services, for example, would appear as a productivity decrease.

II. Changes in Productivity in the British Economy

It follows from the nature of available productivity estimates, as shown in the previous section, that there is very little precise knowledge available of what happened to productivity in the last ten years either in the British economy as a whole or in its various sectors. From available evidence, such as shown in Tables I and II, as well as from other similar estimates, the following broad picture arises :

Real product per head in the economy as a whole, as well as in the Census of Production industries, increased throughout the post-war period. According to some estimates [1] real product per head was already in 1946 about 5% higher than in 1938 and increased at the rate of 2·9% per annum (or excluding Armed Forces at the rate of 2%) between 1946 and 1950. Both industrial output per head and manufacturing output per head was somewhat, perhaps 3%, lower in 1946 than the average of the years of 1935–38, but between 1946 and 1950 both increased at the annual rate of 5% and 6% respectively. There was only a slight increase in 1951.

The generally favourable development is confirmed by the more detailed productivity estimates in thirty-one industries shown in Table II. The increase in productivity in 1950 over 1949 in the manufacturing industries covered by Table II, representing metals, building materials, textiles and other consumer goods, was $3\frac{1}{2}$%, the same as between 1948 and 1949, as compared with 6% between 1947 and 1948 and a fall of 2% between 1946 and 1947. In the first half of 1951 the increase was only $1\frac{1}{2}$%. As compared with pre-war (usually 1935), productivity in a some-

[1] Estimates by Mr. Seers in the *Bulletin of the Oxford University Institute of Statistics* (Vol. 11, 1949) for 1938 and 1946–48 and by Mr. Reddaway and Professor Carter (*L.C.E.S.*, August 1950 and 1951) for 1946–50.

what smaller range of industries had in 1950 risen by 10%. These industries cannot be regarded as a good sample of industry as a whole. They were chosen from purely statistical considerations, and exclude such industries as engineering, vehicles and chemicals in which the greatest post-war advances in productivity appear to have taken place.

The striking fact is not only that the rate of increase appears to have been higher during the post-war years than in the inter-war period but also that virtually all industries showed improvements. Admittedly the base year 1946 was a year of relatively low finished output because industrial reconversion was in an early stage, while 1947 was affected by the fuel crisis, but from then onwards progress was continuous throughout 1948, 1949 and 1950, and while a few industries showed exceptional progress, almost all others participated in the upward movement.

The estimates given in Table II relate generally to annual output per employee or worker. They would reflect therefore the effect of changes in absenteeism and holidays as well as changes in working hours. In view of the fact that annual holidays have been both more general as well as longer than before the war, the data somewhat understate the increase in productivity. Similarly, actual hours of work declined slightly, and therefore output per man-hour increased more than output per man-year since pre-war. There was but little change in actual hours worked over the post-war years. Average weekly hours worked in industries covered by the inquiry conducted by the Ministry of Labour amounted to 46·1 in October 1950 and 45·6 in April 1950. The corresponding pre-war figures were 46·5 hours in October 1938 and 47·8 hours in October 1935. The last figure makes, however, no allowance for loss of time due to voluntary absence, sickness, etc., and thereby exaggerates actual hours worked.

Another factor which should be mentioned is the increase in the proportion of salaried employees in the labour force from about 13 out of 100 workers before the war to 16 after the war as suggested by preliminary Census returns. Thus the increase in productivity per employee, a more significant measure from the point of view of the size of the national output, was somewhat smaller than the increase in output per wage-earner.

Comparing the position with pre-war for industries for which data are available in 1950, productivity in the metal industries is mostly well above the pre-war level. Of textiles, cotton and rayon weaving and wool textiles are above the pre-war level, but cotton spinning and doubling appears still to be below it. Of

building materials the cement industry is well above the pre-war level, while the brick industry has just passed the pre-war mark. Of the miscellaneous industries, productivity in the tobacco and paper industries is well above the pre-war level. In coal-mining output per head per year is still below the pre-war level, while output per manshift is above it, which is due to the smaller number of shifts worked per week. Productivity in both the gas and the electricity industry is well above pre-war level.

Reviewing progress made over the post-war period in the industries covered by Table II, most branches of the metal industry, especially steel, recorded substantial increases, while iron foundries and non-ferrous metals showed rather smaller increases. In the various branches of textiles and clothing productivity also rose, but generally rather slowly. The same applies to the miscellaneous consumer-goods industries covered, *e.g.*, pottery, linoleum, furniture, tobacco and so on. In coal-mining output per head of wage-earners on colliery books rose slowly throughout at a somewhat lower rate than output per manshift, while in gas and electricity there was an apparant decline in output per head no doubt due largely to the restoration of the pre-war services provided.

Development of productivity in British industry over the post-war period compares favourably with progress in American industry. Statistical evidence there is equally fragmentary, although the kind of information presented in this note on British industry is supplemented there by a large number of sample inquiries of factory records for productivity purposes undertaken by the Bureau of Labor Statistics. Real product per worker in all private industries of the United States continued to increase during the post-war period, and the annual increase was approximately 1½% between 1929 and 1950, while the rate of increase per man-hour was higher—about 2%. In manufacturing industry output per man-hour in 1950 was about 20% higher than in 1939, and the rate of increase over the post-war years was not substantially different from that in the United Kingdom. The trend in individual industries was, however, more uneven than in the United Kingdom.

III. Factors Affecting Productivity Changes

Information on changes in productivity alone tells us little on expected trends without the knowledge of the factors motivating these changes and their relative importance. Pre-war discussions of the rate of increase in productivity paid little attention to this

aspect of the problem. It was implicitly assumed that the rate of progress achieved was the result of all changes which occur in production and managerial technique and of the spreading of such changes over industry. It was also assumed that such changes were made possible in the advanced industrial countries by the use of a certain proportion of current resources for capital investment. The exact relationship was seldom analysed, and even on such vital issues as to whether the rate of productivity changes is continuous or whether it fluctuates with the trade cycle, pre-war evidence is weak and contradictory.[1]

Although we can say little on the relative importance of the various factors affecting productivity, it is nevertheless important to bear in mind that increased output per worker is an indicator of general efficiency and shows the effect of a large number of separate though inter-related influences (some short term, others long term) such as the degree of utilisation of capacity, technical improvements, increased managerial efficiency, better flow of materials and components and the relative contributions of plants at different levels of efficiency, as well as the increased skill and better effort of workers. The post-war increase in our productivity was undoubtedly influenced by the fact that we eventually overcame the initial difficulties of the reconversion period. The loss of skill due to war changes, both on the management and the labour side, was largely made up; the supply of fuel, materials and components greatly improved, especially from 1948 onwards. There was a better use of existing capacity, and evidence indicates that over this short period there was a close correlation between the expansion of production and increased productivity. An important factor was the sustained level of investment in manufacturing industry, perhaps above that of 1934–38. This investment meant not only new capacity as well as replacement of old capacity by more efficient equipment; it also meant the application of new processes and the introduction of new products. Another factor was the growing "productivity consciousness" which created an atmosphere in industry favourable to productivity increases. This meant that the large potentialities for an immediate improvement of productivity were realised, that ways and means to improve productivity were explored and that positive

[1] S. Fabricant's studies suggest that in quite a few U.S. industries productivity increases continued throughout the troubled years between 1929 and 1937, while the more scanty British data show strong cyclical fluctuations in the rate of productivity increases. (See S. Fabricant: *Employment in Manufacturing Industry, 1899–1939*, New York, 1942.)

measures were adopted in many factories and workshops for this purpose. The wide field in which a solution was sought included efforts towards greater standardisation, a wider exchange and application of the best known methods either in this country or in, say, the United States, efforts to increase the level of managerial skill and managerial effectiveness, wider application of wage systems which appear to promote productivity increases, etc.

Far-reaching conclusions should not be drawn from the meagre and rough statistics presented in this note. It will be possible to make somewhat better estimates of changes in productivity for broad groups of industry once the detailed results of the first complete post-war Census of Production are analysed. Really reliable information on changes in productivity within individual industries and a worth-while analysis of the factors determining such changes must wait until field studies of plant records are made directly for this purpose.

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London.

LONG-TERM TRENDS IN EUROPE'S TRADE [1]

1. THE object of this note is to analyse the main changes that have taken place in the foreign trade of the four principal countries of Western Europe over the past forty years. It concentrates on three important trends: the trend of imports in relation to National Incomes; the trend of trade with other European countries in relation to trade with the world outside Europe; and the trend in the main categories of imports and exports such as foodstuffs, raw materials and finished goods, in relation to one another. The results are presented summarily, without extensive commentary.

2. The four countries included in the study are the United Kingdom, France, Italy and Germany. These countries account for about two-thirds of the total trade of Western Europe.[2] They are obviously not a representative sample of the whole of Western Europe, since they consist of the industrial rather than the agricultural economies and are less dependent on foreign trade both in relation to national income and per head of population. Although these differences are important in absolute terms, however, it is not unlikely that the same trends as have been at work in the four principal countries have also been in operation in the rest of Western Europe.

I

3. Since 1913 foreign trade has diminished in relation to national income in all the major industrial countries. In the United States there has been a fall from 6% in 1913 to 3% in 1949–50. In the four main countries of Western Europe the fall over the same period has been from 26 to 17%. The drop has been steeper in the United States than in Europe; but the divergence is almost entirely the product of the war and post-war years and was negligible up to 1937. Before the First World War, the United States had about the same national income in current dollars as the four Western European countries; but her imports were only about one-quarter of imports into the four countries

[1] We are indebted to the staff of O.E.E.C. for assistance in preparing this note.

[2] The phrase "Western Europe" is used here to mean countries participating in the O.E.E.C. Spain and Finland are thus excluded while countries like Greece and Turkey are included.

taken as a group (and hence excluding imports from one another). Ever since then, the Western European countries have spent on imports a proportion of their national income that has been from three to five times as high as in the United States. Their combined national income has trebled in current dollars, while the United States national income has grown tenfold; their imports in current dollars have doubled, while United States imports have quadrupled. Imports have failed to keep pace with national incomes.

4. These trends may be put down to the restrictive commercial policies pursued. But there have also been other important influences at work. The consistently lower ratio of imports to national income in the United States, for example, reflects the much wider range of indigenous resources on which the United States can draw. It also reflects to some extent the relatively high price of services and of goods not entering into trade in the United States; the ratios of imports to industrial and agricultural output would be less divergent. These circumstances apart, the restrictions limiting intra-European trade—in contrast to the absence of such limitations on intra-regional trade in the United States—may well have contributed to raising the dependence of each of the Western European group on imports from outside.

5. The downward trend in the ratio of imports to national income has also been influenced by technological factors. It might be supposed that the trend would normally be upwards and that, with an increase in population and standards of living, Europe in particular would require a rapidly increasing volume of imports. If this were so, and if imports rose faster than income, Europe would become increasingly dependent on world markets. But in fact there are very few commodities of which one can say with confidence that imports will increase more rapidly than income; there are some for which even the absolute level of demand may fall. It is not just that trade is less free than forty years ago, but that technical change is also more rapid. Industrial countries can grow more food by using improved agricultural techniques and keep their need of imported food within bounds. They can develop new raw materials by employing chemistry and engineering in place of colonial development. Steel and concrete can take the place of timber; rayon can be substituted for cotton; synthetic rubber, plastics, aluminium and other products can be used instead of older raw materials. New products such as automobiles, manufactured

locally, absorb a large slice of the increment in national incomes; a further slice goes on services of all kinds which must be supplied on the spot and have formed a rising proportion of total income.

6. It is not suggested that there is anything inevitable, nor even indeed desirable, about the trend towards economy in imports. On the contrary, there are some countries in Western Europe where specialisation has gone further since 1913 and increased the general dependence on imported goods. It is also probable that, with different commercial policies, foreign trade would have taken an expanding rather than a declining share of total economic activity; there is, at any rate, no evidence that trade between regions of the United States has shown the same downward trend in relation to income as the trade of the United States with other countries. But it seems reasonable to conclude that Western Europe is neither so dependent on additional imports (*e.g.*, of foodstuffs and materials) for her economic development, nor so exposed to a deterioration in her terms of trade in consequence of that dependence, as one might be temped to conclude *a priori*.

II

7. The changes in the geographical pattern of imports into the four European countries are analysed in Table I.

Table I

Sources of Imports into the United Kingdom, France, Germany and Italy, 1913–50

Values in current $ billion; and percentages

	1913.	1929.	1932.	1937.	1938.	1938.[4]	1947.	1950.
Imports from each other	1·8	2·1	0·7	1·1	1·0	0·8	0·7	1·7
Imports from rest of Western Europe[1]	1·2	1·9	0·7	1·4	1·3	1·1	1·3	2·3
Imports from elsewhere	5·8	8·6	3·9	7·2	6·3	5·9	10·8	10·5
Total imports	8·7	12·6	5·2	9·7	8·6	7·8	12·8	14·5
Percentage coming from:								
Western Europe[2]	38	36	34	29	30	28	18	30
North America	18	18	16	15	16	17	35	17
Latin America	10	11	10	11	10	9	11	8
Eastern Europe	9	8	9	11	10	11	3	4
Australasia and India[3]	10	11	11	13	13	14	11	14
British Overseas Territories	15	16 { 4	20 { 5	21 { 6	21	21	22 { 5	27 { 8
French Overseas Territories		3	5	5			7	7
Sources not specified above		9	10	10			10	12
	100	100	100	100	100	100	100	100

[1] Belgium, Denmark, Netherlands, Norway, Sweden, Switzerland. Other members of O.E.E.C. are included in the miscellaneous group.
[2] Including all members of O.E.E.C.
[3] Including Pakistan and Ceylon in 1947 and 1950.
[4] Only two-thirds of imports into the German Reich are included so as to obtain figures comparable with those for the area of the Federal Republic.

8. The most striking change in the pre-war period was the decline in intra-European trade. In 1913 the four countries drew over one-fifth of their imports from one another; in 1937 they drew not much more than one-tenth. Imports from other countries in Western Europe were a comparatively steady proportion of the total. Thus the whole of the shift that occurred over this period was at the expense of the trade of the four countries with one another and in favour of trade with countries outside Western Europe. There was also a second, and smaller, shift away from imports from North America. Of the countries that rose in importance as sources of supply, the British and French colonies were outstanding; Australasia and India came next; and there was also an increase, during the nineteen-thirties, in the share of Eastern Europe.

9. After the war, intra-European trade was at first very low. In 1947, for example, only one-sixth of the total imports of the four countries came from Western Europe, compared with over one-third in 1913 and one-quarter before the war. Since 1947, however, intra-European trade has expanded greatly and is now well above the pre-war level. The steady long-term trend of reduced dependence of imports from other European countries has thus been reversed. In 1950 Western Europe was supplying a higher proportion of the imports of the four countries than in pre-war years, although a considerably lower proportion than in 1913.

10. The low level of intra-European trade immediately after the war was matched by a corresponding dependence on supplies from North America. By 1950, however, North America was supplying no more than the pre-war share of imports. Of the other main sources of supply, the overseas territories continued to rise in importance; in the past twenty years the proportion of imports that they supply has more than doubled, and is now half as large as the proportion supplied by the rest of Western Europe. The relative importance of Latin America as a source of supply appears to be declining. The biggest change, however, is in imports from Eastern Europe. In recent years these have been fairly stable at about one-third of the pre-war proportion.

11. So far, the changes in imports have been analysed in terms of value. It is difficult to reduce the figures to indices of volume; but by making rough corrections for changes in unit values, one can arrive at the estimates summarised in Table II.

12. These estimates imply that imports fell up to 1937 n-

only in relation to national income but also in absolute terms. There was a small increase between 1913 and 1929 and then a heavy drop which reduced imports per head to some 20% below the 1913 level. The reduction was concentrated on trade with

TABLE II

Volume of Imports into Four Main Western European Countries 1913–37

	Imports from all sources.			Imports from Western Europe.*			Imports from other sources.		
	1913.	1929.	1937.	1913.	1929.	1937.	1913.	1929.	1937.
Food	100	115	105	100	112	72	100	116	115
Materials	100	98	84	100	105	85	100	97	83
Finished products	100	103	65	100	81	41	100	153	116
Total	100	106	86	100	100	64	100	109	97
Total *per capita*	100	104	80	100	98	60	100	107	91

* The four main countries together with Belgium, Denmark, Netherlands, Norway, Sweden and Switzerland.

Western Europe (including the trade of the four countries with one another); trade with other countries was about the same in 1937 as in 1913.

13. A division of imports into the three main categories of food, materials and finished goods shows that imports of food held up better than the other two groups.[1] In 1937 total imports of food seem to have been slightly higher than in 1913; imports of materials were about one-sixth lower and imports of finished products nearly one-third lower. One reason for the fall in

[1] Only a rough division has been made, taking the groups given in each country's trade returns as shown in the following table:

Country.	Food.	Materials.	Finished products.
Germany	Ernährungswirtschaft	Rohstoffe und Halbwaren	Fertigwaren
France	Objets d'alimentation	Matières nécessaire à l'industrie	Objets fabriqués
Italy	Generi alimentari	Materie primie greggie / Prodotti semi lavorati	Prodotti finiti
United Kingdom	Class I	Class II	Class III

The items entered under the three headings vary somewhat from country to country, *e.g.*, refined petroleum is entered in the finished products group in United Kingdom trade returns, while for the other countries it is included in the materials group. For any one country, however, the classification remains practically the same for all years shown.

imports of materials may have been the decline in textile exports from the four countries, this decline reacting on imports of textile materials, and so changing the balance between imports of materials and imports of foodstuffs.

14. Between 1913 and 1929 Western Europe more or less kept pace with other countries as a source of food imports, and more than kept pace as a source of raw materials. But in finished goods the trends were widely divergent: imports from Western Europe fell, while from other countries they rose by over 50%. In the following decade this divergence continued, so that by 1937 imports from Western Europe of finished products were only two-fifths as great as in 1913, while imports from other sources were 15% greater. In this period there was also a remarkable divergence between Western Europe and other countries as suppliers of foodstuffs, imports from Western Europe falling by over one-third, while imports from elsewhere were maintained in volume.

15. The changes in each category are more fully set out in Table III, which shows the proportion of the total supplied by Western Europe at various dates.

TABLE III

Relative Importance of Western Europe as a Source of Imports, 1913–50

(Share of ten Western European countries in imports into four selected countries)

	Food.	Materials.	Finished goods.
1913	24	24	71
1929	23	23	58
1937	17	25	43
1947	10	15	26
1950	24	21	44

16. In the case of food, the dip in Western Europe's contribution after 1929 comes out clearly, and so also does the recovery over the past few years to a proportion as high as in 1913. This improvement is partly due to the great efforts that have been made to expand agricultural production in Europe and partly to the circumstance that a higher proportion of the food entering into intra-European trade consists of dairy produce, fruit and vegetables, etc., and is more vulnerable, therefore, to a depression like that in the thirties. In materials the share of Western Europe has remained fairly steady except in the immediate post-war years. On the other hand, in

finished goods Western Europe's share fell steeply up to 1937, and is now hardly any bigger, in spite of liberalisation of trade and restrictions on dollar imports.

17. One consequence of these changes in the structure and pattern of trade has been that the balance between food, materials and finished goods in imports from Western Europe into the four countries has substantially altered. In 1950 each formed about one-third of the total; but in 1913 the ratios stood at 21 : 35 : 44. Thus food has risen greatly in importance relatively to finished goods. No change of equal magnitude has occurred in imports from elsewhere. Food and finished goods increased relatively to raw materials up to 1937; in 1950 the proportions were not very different from pre-war. For imports from all sources, the balance between the three categories has changed even less, finished goods remaining steady at about 20%, food rising between 1913 and 1950 from 30 to 37%, and raw materials falling from 49 to 43%. The proportions between the three main categories were almost the same in 1950 as they had been in 1937.

18. There is now a much closer similarity than formerly in the make-up of imports from inside and outside Western Europe. This is brought out in Table IV, which shows that the tendency

TABLE IV

Share of Main Categories in Total Value of Imports

	Imports from :							
	Western Europe.				Other areas.			
	Food.	Materials.	Finished products.	Total.	Food.	Materials.	Finished products.	Total.
1913	21	35	44	100	35	55	10	100
1950	33	34	33	100	38	46	16	100

for food, raw materials and finished goods to form roughly equal proportions of total imports has operated both in intra-European trade and in trade with other areas.

III

19. The changes that have taken place in the exports of the four main European countries are analysed in Tables V and VI. The volume of exports has dropped much more heavily than that of imports, and in 1937 was no more than about 60% of the volume in 1913, while the corresponding reduction in imports

was to 86%. This divergence is a broad measure of the change that took place over this period in the terms of trade of the four countries in their favour; it somewhat exaggerates the change, however, since there was a simultaneous reduction in exports of capital and hence in the export surplus.

TABLE V

Volume of Exports from Four Main Western European Countries 1913–37

	Total exports.			Exports to Western Europe.*			Exports to other markets.		
	1913.	1929.	1937.	1913.	1929.	1937.	1913.	1929.	1937.
Food	100	80	54	100	60	40	100	101	69
Materials . . .	100	90	76	100	94	68	100	85	87
Finished products .	100	100	58	100	93	47	100	104	65
Total . . .	100	97	61	100	88	49	100	103	69

* The four main countries together with Belgium, Denmark, the Netherlands, Norway, Sweden and Switzerland.

TABLE VI

Export Markets of United Kingdom, France, Germany and Italy 1913–50

Values in current $ billions

	1913.	1929.	1937.	1947.	1950.
Exports to one another . .	1·7	1·9	1·0	0·7	1·7
Exports to rest of Western Europe *	1·3	1·9	1·3	1·5	2·6
Exports to other areas . .	3·9	5·7	4·2	5·6	8·2
Total Exports . . .	6·9	9·5	6·5	7·8	12·5
Percentage share of Western Europe * . . .	43	39	35	28	35

* The four main countries together with Belgium, Denmark, the Netherlands, Norway, Sweden and Switzerland.

20. Of the main categories of exports, the materials group has kept up best. In 1937 it had fallen by one-quarter in comparison with 1913. The drop in exports of food and finished products over the same period was between 40 and 50%. In all three categories, Western European markets lost ground to markets elsewhere, the total volume of exports to Western Europe falling by one-half, while the volume of exports to other markets fell by 30%. The contrast between the two groups of markets was already perceptible in 1929, but became rather more pronounced in the ensuing slump.

21. The decline in the relative importance of European markets between 1913 and 1937 is also illustrated in Table VI. In 1913 43% of the exports of the United Kingdom, France, Germany and Italy were sold in Western Europe; by 1937 the proportion had fallen to 35%. In the post-war years still lower proportions were recorded, but the recovery in intra-European trade had by 1950 re-established the pre-war proportion of 35%.

22. No large changes have taken place since 1913 in the relative importance in total exports of the three main commodity groups. Exports of food and materials have fallen slightly in importance relatively to finished products, which are by far the largest of the three groups, especially in trade with markets outside Western Europe. More significant changes have occurred, however, in the composition of the finished products group. This may be illustrated from the figures for the United Kingdom. In 1913, 31% of United Kingdom exports consisted of cotton, woollen and worsted yarns and manufactures; in 1950 the proportion was 13%. For cotton goods alone the fall was from 24 to 7%. On the other hand, machinery, vehicles and electrical goods, which in 1913 made up 12½% of total exports, made up nearly 40% of the total in 1950. Similar shifts in the composition of exports took place in the other countries.

23. Changes of such magnitude in the structure of the export industries have important reactions on the consumption of raw materials. In the United Kingdom, for example, imports of cotton fibres have been reduced from more than 9% of total imports in 1913 to 6% in 1950, in spite of large increases in the domestic consumption of cotton textiles, both in apparel and for industrial purposes. In other industries, notably steel and chemicals, raw materials requirements have increased. These raw materials are, however, produced to a greater extent within industrial countries and do not weigh nearly so heavily in the import bill of the four European countries.

IV

24. In 1913 the four European countries had a visible trade deficit of about $2 billion. Their import surplus of foodstuffs was of about the same size, a large deficit on materials balancing a large surplus on finished products. In 1937 the same relationships were maintained. The trade deficit was greater, and so was the deficit on foodstuffs (imports of food had increased and exports had fallen); but materials and finished goods still balanced one another, the deficit on the one and the surplus on

the other being of exactly the same value as in 1913. By 1950, however, the pattern had changed slightly. The deficits on foodstuffs and raw materials were much higher, but the surplus on finished products had risen so much more than either that the total deficit was actually less than in 1937.

25. In trade with the rest of Western Europe, a large surplus on finished goods more than balanced a large deficit in foodstuffs. Although the surpluses and deficits lay in the same direction in 1950 as in 1913, they were substantially larger and were still mounting.

26. In trade between the four countries and other areas, the pattern has been consistently one of a large import surplus of food and materials and a large export surplus of finished products. The size of the surpluses and deficits remained roughly constant between 1913 and 1937, with a slight tendency for the surplus on finished products to decline and a quite pronounced tendency for the deficit on foodstuffs to increase. Between 1937 and 1950 both deficits and surpluses rose sharply in terms of current dollars. It remained true in 1950, as had been true in 1913, that the surplus on trade in finished products was sufficient to offset rather more than one-half the deficit on trade in food and materials. There was, however, an important difference between the trend of development in 1950 in trade with other areas and in trade with the rest of Western Europe. In the latter case the tendency was for small deficits and surpluses to become larger; in the former, for large surpluses and deficits to become smaller. This is perhaps one more example of the way in which the differences between the pattern of trade with countries outside and inside Europe had been tending to disappear.

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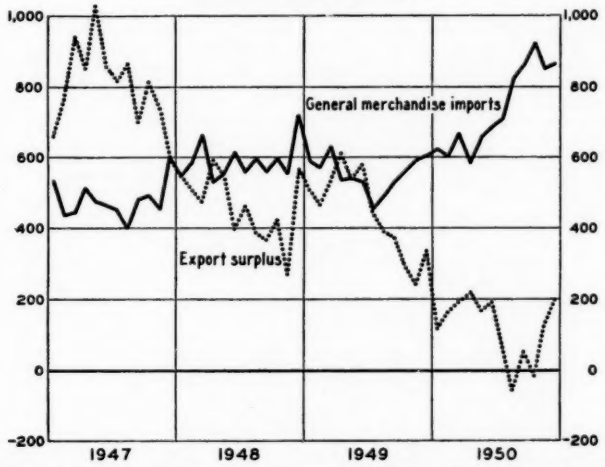
UNITED STATES COMMODITY IMPORTS IN THE LONGER RUN

AMERICA'S export surplus shrank from the impressive peak of $1,029 million in May 1947 to a monthly average of $119 million in 1950 (see chart). In a few individual months there was a trade deficit instead of a surplus. Much, but not all, of this shrinkage was to have been expected. Europe's emergency post-war needs have now been met, and her output has expanded; foreign dollar and gold reserves, accumulated elsewhere during

United States Export Surplus and General Merchandise Imports, Monthly 1947–50 *

(Million dollars per month)



* Council of Economic Advisers, *Economic Indicators*, May 1948, p. 18; March 1949, p. 18; March 1950, p. 18; and April 1951, p. 21. Original data from Departments of Commerce, the Army, and the Navy. Chart is by P. Stanley King.

the war, have been depleted or exhausted; purchases from dollar markets were restricted by direct controls and devaluation; and foreign economic aid from the United States Government has tapered off.[1] At the same time, United States imports have risen under the combined impact of sterling devaluation,

[1] "The International Movement of Gold and Dollars in 1950," *Federal Reserve Bulletin*, March 1951, XXXVII, 257–8.

recovery from the business downswing of early 1949 and the expanded defense program. The net effect of higher imports and reduced exports was to make "the dollar shortage" for a time an academic question.

The importance of military events in the second half of 1950 may obscure certain significant features of recent United States merchandise trade. Considerable reduction in the export surplus preceded the Korean war. Since August 1947 there has been an impressive and generally sustained rise in the level of American imports (see chart), not seriously interrupted by the industrial downswing of 1949. Even before June 1950, imports had risen to an annual rate of $7·5 billion. Though a small figure in relation to the United States economy, this was exceeded

Values of United States Primary Commodity Imports, 1950 *
(Million dollars)

A. *Largely obtained by import, domestic substitutes unsatisfactory*		B. *Largely obtained by import, domestic substitutes satisfactory*	
Coffee	1,091	Natural rubber	458
Newsprint	453	Copra and coconut oil	102
Tin	203	Tung oil	24
Cocoa and cacao beans	167		
Burlap, jute and hard fibres	156	Total, Group B	701 [a]
Nickel	77		
Bananas	56	C. *Largely domestically produced, considerable supplementary imports*	
Tea	54		
Pepper, unground	47	Raw wool and related hair	427
Asbestos	47	Cane sugar	380
Manganese ore	41	Wood pulp	240
Goatskins and kidskins	39	Copper	235
Cigarette tobacco, Turkish type	38	Softwood lumber	231
Industrial diamonds	34	Lead	130
Mica	24	Zinc	65
Chrome ore and chromite	23	Aluminium	63
Platinum-group metals	23	Hides and skins	62
		Pulpwood	24
Total, Group A	2,753 [a]	Total, Group C	1,930 [a]

Grand total, Groups A, B and C = 5,384 [a]

* Data from *Foreign Commerce Weekly*, March 26, 1951, pp. 31–2.
[a] Including minor unspecified items. Grand total represents more than 60% of general merchandise imports, 1950.

by the national income of only a few countries in 1949.[1] Nor can inflated domestic prices explain the rising value of imports. United States wholesale prices in January–May 1950 were at about the monthly average of 1947, and considerably below their 1948 peak.

[1] United Nations Statistical Office, *National and Per Capita Incomes, Seventy Countries, 1949* (New York, 1950), pp. 14–16. Estimates in billions of dollars: U.S.S.R., 59·5; U.K., 38·9; France, 19·9; and lesser figures for India, Western Germany, China, Canada, Italy and Japan.

The commodity composition of America's merchandise imports (see table) calls for serious analysis. Implications for longer-term trade developments are clearly suggested. Estimates of income elasticities and price elasticities of America's demand for imports [1] can be seriously misleading unless non-price characteristics of the relevant commodities are sufficiently understood. Light can also be thrown on the problems of those "underdeveloped areas" which supply primary products to the American economy. Certainly a number of important propositions appear to be substantiated by the data.

1. High-level production and consumption in the United States entail heavy import demands, to which concern over cyclical problems must not blind us. Her mechanised economy depends substantially upon foreign sources of mineral products. High levels of living, which naturally involve demands for luxury manufactured goods and services (foreign travel, for instance), are also reflected to a surprising degree in takings of raw commodities. Tropical foodstuffs and beverages head the import list: coffee, cane sugar, cocoa, bananas, tea, pepper. Natural rubber is a component of major consumer durable goods. A literate public bombarded with expensive advertising uses up vast quantities of imported newsprint and wood-pulp. Turkish-type cigarette tobacco is blended with the domestic crop to produce a product of appropriate quality. Keynes in his posthumous article [2] argued the case of classical economics: in the absence of more severe United States trade restrictions, the extremely high wage-rates in the United States could be expected to make imported goods increasingly attractive. In fact, her Government has reinforced this tendency, most recently at Torquay, by continuing to reduce import barriers.

2. Many import commodities, coming from countries with resource patterns quite different from that of the United States, cannot be readily foregone. Climate is the obviously determining factor for tropical crops from the south, and to some extent for forest products from the north. Relative land–labor ratios help to explain the importation of non-meat animal products (hides and wool) from more sparsely settled regions and of tea

[1] For example, Randall Hinshaw, "American Prosperity and the British Balance of Payments Problem," *Review of Economic Statistics*, February 1945, XXVII, 1–9; and B. A. de Vries, "Price Elasticities of Demand for Individual Commodities Imported into the United States," *Staff Papers* (International Monetary Fund), April 1951, I, 397–419.

[2] J. M. Keynes, "The Balance of Payments of the United States," ECONOMIC JOURNAL, June 1946, LVI, 172–87.

from the more densely populated Orient. Indeed, if trade policy permitted, America might well draw a considerable proportion of its meat supply from abroad, with consequent advantage to consumers here, though not in the United Kingdom. Imports of tin, nickel, asbestos, manganese and industrial diamonds offset the complete lack of high-quality domestic deposits. In other individual cases " satisfactory substitutes " can be produced at home, but all involve higher costs, and many may be feasible only as emergency measures. While particular import goods may be dispensable, even the rich resources of the United States would not be sufficient to supply any large number of such deficiencies simultaneously from domestic production.

3. In certain conspicuous respects, United States' dependence on foreign sources is not only heavy but also increasing. There has been a pronounced shift towards imported wool since the thirties. Depletion of certain domestic deposits makes external mineral resources a matter of major concern. Formerly an exporter of copper, the United States now imports it. American enterprises have become increasingly interested in foreign supplies of petroleum. In the immediate future, iron ore will be arriving from Venezuela and Labrador. Here are reminders that the obstacle of diminishing returns is often encountered precisely in the expansion of mineral and agricultural output. The importance of cyclical fluctuations in terms of trade, by no means a decisive factor in the well-being of " primary-producing " countries, may be exaggerated, as compared with longer-term influences that operate in such nations' favor.[1]

4. Technological developments, which are counted on to offset diminishing returns, reduce international trade far less than is frequently supposed. To be sure, silk has fallen from its former importance, in response to spectacular achievements in synthetic-fiber production. An effective synthetic substitute for wool may be in the offing. The development of storing and shipping in bulk (*e.g.*, sugar) will diminish and may jeopardise outlets for jute and jute products. Jute from sterling sources may be displaced in any case by the development of kenaf in Latin America. Wire baling and the harvester-thresher restrict usage of binder twine and coarse fibers such as henequen and sisal.

But such dynamic interproduct competition, which is more

[1] In this connection, barriers to the further expansion of low-cost plantation agriculture have been noted by some observers, *e.g.*, Alan Pim, *Colonial Agricultural Production* (London, 1946), pp. 177–8.

a matter of new cost functions than of price or income elasticities, does not necessarily work *against* United States commodity imports. To the extent that paper products replace the fibers (*e.g.*, for bagging), the shift is to a wood-based raw material that cannot be supplied satisfactorily from purely domestic sources. Despite synthetic alternatives, natural rubber has been imported in larger quantities since 1947 than during 1935–39. Even synthetic-rubber production provides an expanded outlet for blackstrap molasses or invert sugar-cane syrup from abroad. Mechanisation brings an indirect demand for metallic mineral imports, and may ultimately require larger petroleum imports as well. Potentially, industrial uses of atomic fission promise a partial shift from domestic to foreign sources of industrial energy, *e.g.*, uranium.

5. Artificial dichotomies between "raw commodities" and "manufactured goods," and between "industrial nations" and "underdeveloped countries," can be carried too far, especially if one seeks "the general case" or a "generally valid proof."[1] Each commodity has its peculiar characteristics and its distinctive impact on the exporting economy. American foreign investment has gone heavily into mineral development, but not into the production of coffee. Mineral, fiber and tree-crop exports are of unequal importance in promoting general economic development in the supplying area. The "dynamic impulse" arising from manufacturing activity is rightly stressed; yet wheat, still a significant United States agricultural export, has played a pivotal role in opening up continental areas to settlement in stimulating transcontinental transportation systems. Denmark and New Zealand yield evidence on the attainability of high *per capita* incomes in agricultural (and exporting) countries.

Where industrialisation is promoted, a primary-producing country has a wider degree of economic latitude in developing processing industries than in creating enterprises unrelated to indigenous resources. Certainly nickel, cane sugar, coffee and hides embody quite different amounts of domestic manufacture. Whether exports take the form of pulp-wood or newsprint, copra or coconut oil, raw or refined sugar, jute fiber or burlap, blackstrap molasses or industrial alcohol is of considerable importance to the economic progress of the exporting economy. Unfortunately, appropriate processing activities have not infrequently

[1] For a particularly questionable use of this technique, see H. W. Singer, "The Distribution of Gains between Investing and Borrowing Countries," *American Economic Review* (*Papers and Proceedings*), May 1950, XL (2), 473–85.

been discouraged by the commercial policies of importing countries.

The foregoing analysis suggests that the commodity structure of United States trade must be viewed in a longer historical perspective than has been common. That is as true of merchandise groups and total merchandise trade as it is of individual commodities. We sometimes forget how recent in origin is the world demand for America's "automobiles, radios, typewriters, electric household appliances, washing machines, etc.," [1] and that to supply that demand itself involves considerable United States imports. In the past five years there have been periods when the world hungered for America's goods, but also recent months during which the United States has sought more of certain goods than the world has been able and willing to sell. In the perspective of twenty years, the cyclical collapse of United States imports in the thirties dominates the picture. Looking backward a quarter-century, however, secular change is the more impressive feature: as late as 1922, agricultural exports from the United States exceeded non-agricultural exports, the persistent relationship previous to 1912.[2] Not until 1893 did her exports of manufactured foodstuffs, semi-manufactures, and finished manufactured goods exceed exportation of crude materials and crude foodstuffs.[3] These changes represent a striking capacity for economic adaptation.

Additional signs suggest that, by a process we little understand, the shift in world banking leadership from London to New York is being accompanied by parallel adjustments in world commerce. In 1950, the United States for the first time replaced the United Kingdom as the world's leading importer.[4] The basic health of the international trading system may well be sounder than has generally been realised,[5] despite the exceptional strains placed upon it in recent years. Certainly

[1] A. H. Hansen, *America's Role in the World Economy* (New York, 1945), p. 136.

[2] U.S. Dept. Comm., Bur. For. Dom. Comm., *Statistical Abstract of the United States 1930* (1930), p. 653.

[3] U.S. Dept. Comm., Bur. Census, *Historical Statistics of the United States 1789–1945* (1949), p. 246.

[4] Cf. United Nations Statistical Office, *Statistical Yearbook 1948* (Lake Success, 1949), pp. 330, 336; and *International Financial Statistics* (International Monetary Fund), February 1951, IV, xxi. While the effects of military events on the trade outcome for 1950 cannot be isolated and must not be minimized, it is worth noting that some of the more spectacular increases in imports and prices (*e.g.*, tin, rubber and wool) did not take place until 1951.

[5] For a similar view concerning Europe's readjustments since devaluation, see comments by G. Haberler on T. Balogh, "European Unification and the Dollar Problem," *Quarterly Journal of Economics*, February 1951, LXV, 123.

specific problems will require and receive special attention, as in the case of Europe's emergency post-war needs, current requirements for armaments abroad, promotion of private foreign investment, technical-assistance and economic-development programs. Moreover, it is a fair premise that public policy in the United States will never tolerate a future depression as severe as that of the thirties. Against this background, the heavy import demands that come with United States peacetime prosperity are highly significant, and their commodity implications warrant further investigation.

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THE MODEL OF AN EXPANDING ECONOMY

THE various models of a continuously expanding capitalist economy, set up, for instance, by Marx, by Cassel and, in recent times, by Mr. Harrod and Professor Domar,[1] all have their origin in a simple piece of arithmetic. When a constant proportion of income is added to capital every year and capital bears a constant ratio to income, then income expands continuously at a constant proportional rate. Thus, when 10% of net income is invested every year, and the stock of capital is five years' purchase of net income, then the stock of capital, the rate of investment per annum, consumption per annum and net income per annum all expand cumulatively at 2% per annum.

The various models which have been set up are based on widely different assumptions, and are arrived at by widely different arguments, but it is no accident that they all yield the same result, for the various assumptions and arguments are merely various ways of giving an economic application to the same piece of arithmetic.[2]

To what use can the model be put? The meaning of a proposition depends very much upon what it denies. In this respect the model is two sided. On the one hand, it shows that there is no inherent logical impossibility in conceiving of a capitalist system enjoying continuous expansion—it contradicts the view that there is an inescapable necessity for capitalism to run down. On the other hand, the model shows that certain special conditions are required for continuous expansion, and so

[1] Karl Marx, *Capital*, Volume II, Part III. (References are made to the English edition of Volume II, published by Swan Sonnenschein, and of Volume III, published by Kerr.) Gustav Cassel, *Theory of Social Economy*, Chapter I, § 6. R. F. Harrod, *Towards a Dynamic Economics*. E. D. Domar, "Expansion and Employment," *American Economic Review*, March 1947. A summary of some recent literature is provided by Harrod, "Notes on the Trade Cycle," ECONOMIC JOURNAL, June 1951.

[2] In spite of a superficial resemblance, Mr. Hicks' conception of equilibrium growth does not belong to this family (*A Contribution to the Theory of the Trade Cycle*, Chapter V) for the ratio of capital to output plays no part in it. Output is perfectly elastic to demand (p. 61), that is, capital equipment is available *ad lib.* "Autonomous investment," like pyramid building, absorbs savings without adding to productive capacity. In short, Mr. Hicks transfers Keynes' short-period analysis into the long period without introducing the essential point of the long period—the growth of productive capacity resulting from investment. He purports to have been influenced by Mr. Harrod's *Dynamic Economics* (p. 7), but he evidently failed to notice what it was about.

it contradicts the view that there is, in general, an automatic tendency for capitalism to keep going.

Cassel lays the main emphasis upon the first aspect; the rest upon the second.

To see the use to which the model is put we must examine the various superstructures of assumptions and arguments that have been based on the arithmetic. First, how are the quantities concerned measured?

The arithmetic makes sense if we apply it to output in real terms. Marx reckons in *value*, that is, labour-time.[1] To arrive at real output it is necessary to multiply *value* by output per man-hour, which is rising through time when technical progress is taking place.

Cassel assumes that output per head is constant (there is no technical progress) so that he has no difficulty in reckoning in terms of real output. Harrod assumes constant prices, and reckons in terms of money. In effect, he takes the money value of output, corrected for changes in prices.

Whatever measure we choose we cannot avoid an index-number problem when relative wage-rates and relative prices alter. The arithmetic represents income simply as a number, and it can be applied only when it is a reasonable abstraction to treat output as though it were homogeneous, that is, with constant relative prices of commodities. When changes in relative prices and relative wages are important, a more complicated analysis has to be developed.

None of our authors gives a very perspicuous account of how capital is measured, but it seems clear that the quantity of capital, at a moment of time, means all the goods in existence at that moment, valued at their prices in terms of a unit of final output, for this is the quantity which is increasing at a constant proportional rate when the conditions of the model are fulfilled.

What about employment? It is an essential characteristic

[1] So long as the rate of exploitation (the ratio of profits to wages) is uniform throughout the economy (wages and profits being the only categories of income) and is constant through time, this comes to the same thing as using the money-wage per man-hour as the unit of account. When the organic composition of capital is different in different lines of production, the ratio of capital to labour is different, and if the rate of profit on capital tends to be the same in all lines (as Marx assumes) the rate of exploitation cannot be uniform. This gives rise to the "problem of transforming *values* into prices"—the *pons asinorum* of Marxian theory, similar to the "adding-up problem" in marginal-productivity theory. Cf. Sweezy, *Theory of Capitalist Development*, Chapter VII. See also his preface to the edition published by Kelley of Böhm-Bawerk, *Karl Marx and the Close of his System*.

of the model that output increases in proportion to the stock of capital. Therefore, if output per man-hour is rising (with technical progress) at a faster rate than the stock of capital, the number of hours' work done in a year is falling through time. This (unless the available supply of labour is shrinking) entails either growing unemployment or a falling number of hours worked per man-year. If output per man-hour is rising in a smaller proportion than the stock of capital, employment is growing, which entails either that population is growing or that there is an indefinitely large reserve army of labour, in open or disguised unemployment, to be taken into service. (Alternatively, hours worked per man-year may be increasing, but this has obvious limits.)

Cassel assumes no rise in output per man-hour and full employment; therefore he requires population to be growing at the same rate as the stock of capital.[1]

Domar assumes full employment, although he allows for rising output per head. This involves him in contradictions or in assumptions about hours of work and the rate of growth of population which he does not in fact specify. Either his model is intended to be radically different from the others or the introduction of full employment into it was simply a mistake.

Harrod is rather vague about employment, while for Marx the existence of a reserve army is one of the central features of the model.

Employment, as such, does not appear in the arithmetic. The conditions of the model concern only the accumulation of capital. The basic condition, that the ratio of output to capital is constant, is satisfied if (1) technical progress is *neutral* in Harrod's sense; this means that, when capital is reckoned in terms of the cost in wage-units of the stock of capital goods, capital per unit of labour is constant, and capital per physical unit of output is falling at the rate at which output per man-hour is rising (that is, capital-saving innovations are being introduced to the same extent as labour-saving innovations);[2] and (2) profit (interest *plus* net profit) per unit of capital is constant. These two conditions entail that prices in terms of wage-units fall at the pace at which output per man-hour rises (if money prices are

[1] Rather, he looks at it the other way round. He assumes that population is increasing at a steady rate, and he postulates that the community carries out investment at a sufficient rate to maintain capital per head at a constant level.

[2] Though capital in terms of wage-units is constant, physical capital is increasing; thus horse-power per man-hour is likely to be rising as technical progress goes on.

constant, the money wage per hour rises with output per hour). The ratio of output to capital, measured in terms of product, is constant. The wage per hour in terms of product rises with output per hour. The relative shares in proceeds of wages and profits (which are taken to be the only categories of income) are constant. (In Marx's language, the rate of exploitation is constant.)

Marx makes great use (and the rest no doubt would concur) of the division of the stock of capital between the two main sectors of industry—that producing investment goods and that producing consumption goods. The model requires that the division between these sectors, both of the stock of capital existing at any moment and of the investment currently going on, corresponds to the division of output between investment and consumption. Productive capacity in each sector is expanding at the same proportional rate as the total stock of capital, and therefore at the same rate as income, investment and consumption.

Next, to satisfy the conditions of the model, the proportion of saving in net income must correspond, at any moment, to the division of total productive capacity between investment and consumption goods, and must remain constant through time. This provides that effective demand expands at the same pace as total output. (The condition that saving is a constant proportion of income is consistent with the condition that the relative share of profit in net income is constant, since it is then not unplausible to postulate a given long-run propensity to save in the economy as a whole.)

Two further conditions are necessary. The stock of capital in each sector must be continuously maintained and adapted to new techniques as it grows. This condition is fulfilled if annual renewals bear a constant proportion to the stock of capital, and amortisation funds, providing at the required rate for wear and tear and obsolescence, taken as a whole, are continuously reinvested as they accrue.

Finally, the gestation period of capital goods must be constant, so that a given rate per annum of investment entails a given growth per annum in the stock of capital available for use.

No doubt it is possible to construct models in which a failure in one of these conditions is compensated by a variation in another—for instance, in which a growth through time of capital per unit of output is offset by an appropriate rate of rise in the proportion of income saved—but this involves complicated relationships between the quantities involved, and the present

argument is confined to the simple model in which all the conditions are fulfilled.

In the following numerical example, the stock of capital is equal to five years' purchase of net income; annual renewals are 10% of the stock of capital in each sector. Investment is 10% of net income. Capital is divided between the sectors in the ratio of consumption to net investment *plus* renewals. The

	Stock of capital.			Annual output.				
	Investment industries.	Consumption industries.	Total.	Renewals.	Consumption.	Investment.	Net income.	Gross income.
Year 1 . . .	200	300	500	50	90	10	100	150
Year 2 . . .	204	306	510	51	91·8	10·2	102	153
Year 10 (approx.) .	240	360	600	60	108	12	120	180

" year " is an arbitrary length of calendar time. It must be long enough relatively to the gestation period of capital goods to make it a reasonable approximation to take the investment made in one " year " equal to the addition to capital available for use in the next.[1]

[1] The example has to be slightly altered in order to be set out in the form which Marx used. His terminology obliges him to make the stock of capital (pre-existing capital, *c*, *plus* the wages fund, *v*) equal to the cost of production of a year's output (annual replacement of capital, *c*, and the year's wages bill, *v*). He usually takes the rate of exploitation to be unity (*v*, wages, equal to *s*, profits) so that, in our example, *v* would be 50. We must therefore put *c* at 450, and consequently gross income at 550. The other quantities are the same as those set out above. (On this basis, organic composition of capital is equal to 9, and the rate of profit on capital 10% per annum.) The gross output of Department I, renewals plus net investment, is 460; while the gross output of Department II, consumption goods, is 90. To avoid tiresome fractions, multiply all the quantities in the example by 11.

Then we have, in the first year :

	c.	*v*.	*s*.	Total.
Department I . . .	4140	460	460	5060
Department II . .	810	90	90	990
Total . . .	4950	550	550	6050

Each quantity increases at the rate of 2% per annum. Marx left his own numerical examples in a state of confusion (*Capital*, Vol. II, pp. 591–610). They were reconstructed by Rosa Luxemburg in better shape, but they are still rather awkward in the form in which she set them out; *Accumulation of Capital*, Chapter VI, pp. 115 *et seq*. See also Introduction p. 18. (References are to the English edition, published by Routledge.)

The specified conditions ensure that output expands continuously provided that investment is maintained at the required continuously expanding rate. This is as far as arithmetic can take us. We must now inquire what motive force may be conceived to keep the economy running along the rails which the conditions have laid out.

In Marx's scheme capitalists are subject to a strong pressure to accumulate. Saving is made only for the purpose of investment, and (apart from crises) all savings are invested as they are made. For Cassel saving *is* investment. But for those who have revived the model under the influence of Keynes the existence of thriftiness by no means guarantees that investment will be carried out.[1] They must therefore pose the question : How can perpetual accumulation be conceived to occur ?

Domar regards continuous investment as requiring a kind of collective faith. Each capitalist finds it worth while to invest at the appropriate rate provided that all the others do so, and so long as each believes that the others will continue, he continues himself.

Harrod relies upon the " acceleration principle." The increase in the rate of output which is taking place " induces " the increase in stock of capital which makes it possible. This is backed up by the view that so long as capitalists collectively keep the stock of capital expanding at the required rate, they are " satisfied," and continue to do so. (Neither argument is at all clearly explained.[2])

Since he is tied up in the " acceleration principle," Harrod has to regard his system as chronically unstable. Any chance increase in output above the rate appropriate to the conditions of the model " induces " a higher rate of investment, and causes a boom which cannot last, and so precipitates a slump.

Another solution of the problem is to graft Marshall's analysis of long- and short-period supply price on to the model. When an economy is expanding at the rate appropriate to the given conditions, all prices are equal to long-period average costs (including in cost, profit on capital at the given rate) and all capital equipment is working at its designed capacity. In each sector conditions of rising short-period supply price obtain, so

[1] Nor does the existence of human needs. One of the confusing points in Mr. Harrod's scheme of ideas is that he seems to identify needs with prospective profits, so that a growth in population automatically induces profit-seeking capitalists to make investment (Southern Italy ?).

[2] Mr. Harrod has elaborated his view in the article referred to above, but still leaves it somewhat mysterious.

that any increase in output relatively to capacity would be accompanied by a rise in price above long-period average cost. The capitalists expect the rate of profit to continue in the future to rule at the present level.

Now, if we postulate that the capitalists' expectations of future profits have great inertia and do not react to passing events, the system can be regarded as being in equilibrium from the short-period point of view. A chance increase in consumption would cause the output of consumption goods to rise above designed capacity, prices to rise above normal costs and so profits to rise above their long-run level. But since this state of affairs is not expected to last, investment is not stepped up, and no "acceleration" occurs. Similarly, a chance increase in investment does not raise expected future receipts (in spite of a rise at the moment, due to the operation of the short-period multiplier). But the prices of capital goods have risen above the normal long-run level, the rate of profit to be expected on funds invested at these prices is less than the accustomed rate, and so, we may suppose, investment is checked. If investment chanced to fall, the price of capital goods would fall, the rate of profit to be expected on funds invested at those prices would rise, and investment would pick up again. Thus, the postulate that expectations do not vary with current events may be considered to endow the system with short-period stability, and (combined with faith in future profitability of capital) to provide a presumption that the rate of investment tends to be maintained at a level which continuously corresponds to the gradually growing capacity of the investment-good industries.

The foregoing argument is intended to show that perpetual steady accumulation is not inherently impossible. We now turn to the arguments intended to show that the conditions required by the model are unlikely to be found in reality. First, consider the assumption, so frequently made, consciously or tacitly, in economic theory, that the economy must always be tending towards a position of static equilibrium.

An economy with constant population and unchanging technique, with capital equipment working at capacity, which has settled down to consuming the whole of its net income, fulfils the specified conditions. It is a limiting case of the model, with the rate of accumulation at zero.[1]

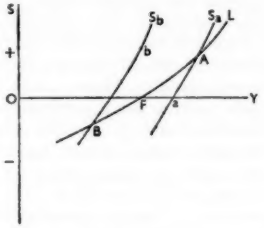
[1] This—simple reproduction—was the only example of the model which Marx worked out satisfactorily. (His examples of expanded reproduction are full of inconsistences, see above p. 46, note.)

But an economy in which accumulation has been taking place up to the present, and which now finds itself with a stationary population and a fixed body of technical knowledge, is in a very different pickle. Investment cannot continue for long at a constant rate of profit; accumulation is tending to come to an end, and as it falls off, a slump will occur.

This is the setting of the vision of the Day of Judgment which Pigou attributed to Keynes,[1] and of the argument as to whether a falling rate of interest and a rising value of money can maintain a given level of employment in stationary conditions.[2] However, the notion of a static state is not more

[1] "Mr. J. M. Keynes's *General Theory of Employment, Interest and Money*," *Economica*, May 1936. It is true that some passages in the *General Theory*, especially Chapter 17, can be taken to suggest that this was Keynes's view. But it is doubtful if he had anything that can properly be called a view on this question. He was impatient of the notion of long-period equilibrium and never brought his mind to bear upon it.

[2] This argument is illustrated in the following diagram. The axes measure saving, S, and income, Y, both in real terms. At each point on the L curve, which represents the long-period relation between saving and income, the stock of capital is appropriate to income. Thus at the point A the stock of capital, say α, is that of which A represents the capacity output; the point B represents capacity output of capital β; and so forth. At the point F net saving is zero.



Now, if the economy exists in a stationary environment, with given, unchanging techniques, population, tastes and rate of interest, positive net investment cannot continue for any length of time, for, if it did, capital, after a while, would become redundant. Thus the only possible position of full stationary equilibrium is at F. (If the L curve does not cut the Y axis, that is, if saving is positive at all levels of income, there is no point of equilibrium short of universal extinction.)

The model of a "pure" trade cycle in a trendless economy (Kalecki, *Essays in Economic Fluctuations*) exhibits income cycling round the point F, disinvestment in each slump wiping out the increment of capital created in each preceding boom.

Each point on the L curve is cut by an S curve showing the short-period relation between saving and income with given capital equipment. The S curves are steeper than the L curve, since a rise in income above the normal capacity output of a given stock of capital is accompanied by a rise in prices above long-period costs, an increase in profits and consequently a rise in the ratio of saving to

realistic than the notion of continuous expansion, and this objection to the model may be dismissed as a case of the pot calling the kettle black.

Next, consider Marx's point of view. His general picture of the process of capitalist development throws up three main objections to the conditions of the model. The first is that in an unplanned private-enterprise economy there is no reason to expect the capitalists to hit off the right proportions of investment in various sectors of the economy.[1] The capital stock is always getting out of gear with the main division of demand between consumption and capital goods,[2] and with subdivisions of demand for particular commodities, so that gluts and scarcities of particular goods frequently occur. This makes smooth development impossible.

The second objection is rather vaguely sketched by Marx;[3] it is more clearly set out by Sismondi,[4] Rosa Luxemburg[5] and

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income. In the diagram S_a represents incomes produced with capital a and S_b incomes produced with capital β.

Take a case where income happens to be at the point b. The economy is now facing the Day of Judgment. Positive investment is going on at the moment, but this will not last, and the economy cannot make the transition from b to F without passing through a cataclysmic slump. The problem then is whether, by lowering the rate of interest and raising the real value of the stock of money, it is possible to move the point F to the right, and flatten the S curves, in such a way as to make a smooth transition from b to F possible.

Now suppose that the stock of capital happens to be a. This is even worse than the Day of Judgment conceived by Pigou. Any income greater than that shown by the point a entails positive net investment, and cannot be sustained for long. But at the point a where savings are zero, output is below the capacity of the stock of capital; therefore disinvestment must be taking place, income must be below a, and the stock of capital must be dwindling towards that appropriate to F. If the economy is subject to a trade cycle, it pursues a spiral course, the net disinvestment in each slump exceeding the net investment in the preceding boom.

When the environment is not stationary, but technical progress combined with population growth make steady accumulation possible, then if the conditions of the model of steady expansion are fulfilled at A and if capitalists are willing to make continuous investment at the appropriate rate, expansion is taking place through time. A line rises from the page through the dimension of time, with its root at A, set at a north-easterly angle to the plane of the diagram indicating the proportional rate of expansion per annum in income and in saving.

[1] E.g., *Capital*, Volume III, p. 141.

[2] Rosa Luxemburg pushed this argument further than it will go. She believed that saving out of profits can be invested only in the sector of the economy where the profits were made, so that, unless the ratio of savings in each sector is just right to begin with, the system will immediately jam, with a surplus of production in one sector and a deficiency in the other. *Op. cit.*, p. 337.

[3] E.g., *Capital*, Vol. III, p. 293.

[4] *Nouveaux Principes d'Economie Politique.*

[5] *Accumulation of Capital.*

Hobson.[1] In their view, real wage-rates fail to rise in proportion to productivity, while profits are largely saved, so that the demand for consumption goods fails to expand as fast as the stock of capital, and accumulation cannot continue to be profitable.

The third objection to be found in Marx's analysis is based on the opinion that technical progress normally takes forms which raise the ratio of capital to output. This violates a basic condition of the model. Marx assumes that the rate of exploitation (which governs the share of profit in proceeds) cannot rise sufficiently to compensate for the increase in capital per unit of output, so that the rate of profit tends to fall over the long run, and the capitalist system is caught in a "contradiction" which sooner or later will bring it to destruction.[2] This is a weak point in Marx's argument, for it is hard to understand how the share of labour in national income can remain constant in face of a rising ratio of capital to output.

If we assume that there is a normal rate of profit on capital (obtainable when effective demand is such as to keep output just at the level corresponding to capacity) which tends to remain constant through time, then a rising ratio of capital to output entails a rising share of profits in total income. A rising capital ratio then has two contrary effects. On the one hand, it means that as time goes by an ever-larger amount of investment is required to create a given increase in capacity; on the other hand, it means that the proportion of saving in income is rising. These two effects might balance, so that accumulation could continue smoothly. This leads us back to the unexplored field of compensated models, in which a deviation from one of the basic conditions of the simple model is offset by an appropriate deviation from another.

When the increase in required investment is greater than corresponds to the rise in thriftiness, then (provided that capitalists do want to make a continuous increase in capacity) the economy undergoes a secular boom. In the reverse case it dwells in a chronic slump.

However, if in fact technical progress on the whole is more or less *neutral*, this problem is not important either way.

In Domar's view the main objection to the conditions required by the model concerns the motive power which keeps accumulation going. A failure of confidence, or a mere tendency for capitalists each to wait and see what the others will do, brings investment to a halt.

[1] *Economics of Unemployment.* [2] *Capital*, Vol. III, Chapter 13.

Harrod's bugbear is a modified form of the Day of Judgment. He conceives of the maximum physically possible rate of increase in output, given by the rate of increase of employable population and the rate of increase in output per head due to technical progress (this he calls the *natural* rate of growth—an unnatural use of language). He expects that in the future this maximum possible rate of growth will fall short of the rate corresponding to the rate of accumulation which has been going on in the past, so that chronic slump conditions will set in unless policies are devised either to reduce thriftiness or to keep the ratio of capital to output rising.

All these views point to circumstances (which may or may not be realised) in which the model would break down.

Even when there is no systematic failure in any of the conditions required by the model, an over-riding objection remains. History and geography present a developing economy with all sorts of chances and changes—some favourable, some unfavourable to accumulation—so that development cannot follow a steady course for long, even if all the conditions are present to start with.[1] And the very fact that actual development is erratic destroys the basic conditions for smooth development.

First, the stocks of specific equipment of various kinds and the supplies of particular types of labour, in existence at any moment, have been moulded by the past history of demand and are usually out of gear with current demand. This destroys the basic condition of the model that productive capacity in the various sectors of industry is adjusted to the division of demand between their products.

Second, when the capitalists know that unpredictable disturbances are liable to occur, the inertia of the economy is destroyed. When the present state of affairs alone is certain, it has an undue influence upon behaviour. Thus, when output expands, for any reason, relatively to capacity, capitalists have a tendency to behave as though they expected the consequent high level of profit to be maintained in the future, and to plan investment accordingly.[2] While investment is going on, profits rule all the higher; but the increase in capacity which is being created is doomed to bring the rate of profit below the level which caused it to be planned. Thus accumulation can take

[1] This point of view is supported by T. C. Schelling, "Capital Growth and Equilibrium," *American Economic Review*, December 1947.

[2] R. M. Goodwin makes an illuminating comparison between expectations that have this characteristic and the operation of a thermostat. (Chapter 22 of Alvin Hansen's *Business Cycles and National Income*, p. 437.)

place only in a series of booms interrupted by slumps. If the economy has not developed smoothly in the past, it is incapable of doing so in the future.[1]

From this it seems to follow that it is a mistake to look for a theory of the trade cycle conceived in terms of oscillations around a trend of steady growth, for an economy in which steady growth is possible differs in its internal structure from one which is subject to oscillations. The connection between the cycle and the trend is both more intimate and more complicated than any that has yet been set out in a systematic theory.

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[1] Mr. Harrod conceives the "warranted rate of growth" which fulfills the conditions of the arithmetical model as a path which the economy is constantly crossing and re-crossing as it advances. But if the above argument is correct, unless the economy is actually on the path, the path does not exist.

EXTERNAL ECONOMIES AND DISECONOMIES IN A COMPETITIVE SITUATION [1]

I. The Scope of the Paper

The purpose of this note is to distinguish between certain types of external economies and diseconomies which are connected with marginal adjustments in purely competitive situations. We shall not be dealing with divergences between private and social interests due to monopolistic or monopsonistic situations, nor with any of the problems which arise from indivisibilities such as the lumpiness of investment in particular forms, nor with any questions about large structural changes such as whether a particular industry should exist at all or not. We shall be concerned only with small adjustments to existing competitive situations.

II. The Competitive Situation with no External Economies or Diseconomies

Let us consider two industries. These "industries" may or may not in fact produce identically the same product and so in reality constitute a single industry. That is immaterial to our general theory. But we assume that within each "industry" there are a large number of independent competing firms, so that to each individual entrepreneur the price of the product and of the factors is given. In the absence of any external economies or diseconomies, each entrepreneur will hire each factor up to the point at which the additional product of the factor multiplied by its price is equal to the price of the factor. Moreover, there will be constant returns to scale. If every factor in either of our two industries were increased by 10%, including the number of entrepreneurs, then the product also would be increased by 10%.

Let us write x_1 and x_2 for the products of industry 1 and industry 2 respectively. We assume that there are two factors, l and c, or labour and capital, employed in both industries, so that $l_1 + l_2 = l$ and $c_1 + c_2 = c$. We will write $\bar{x}_1$, $\bar{l}_1$, $\bar{c}_1$, etc., for the market prices of the products and factors; and $X_1 = x_1\bar{x}_1$, $L_1 = l_1\bar{l}_1$, $C_1 = c_1\bar{c}_1$, etc., for the total value of the output of

[1] This note has arisen, out of a consideration of the problems of the economic development of under-developed territories, in the preparation of Volume II of my *Theory of International Economic Policy* for the Royal Institute of International Affairs.

x_1 or for the total income earned by l_1, etc. Finally, we shall write $\bar{L}_1$, $\bar{C}_1$, etc., for the amounts which the factors would have to be paid if they received the value of their marginal social net products. In our model capital is always the hiring factor, and its reward is, therefore, always equal in each industry to the total output of that industry minus the wages paid to labour in that industry, so that $C_1 = X_1 - L_1$ and $C_2 = X_2 - L_2$.

In the case in which there are no divergences between private and social net products we can write

$$\left.\begin{aligned} x_1 &= H_1(l_1, c_1) \\ x_2 &= H_2(l_2, c_2) \end{aligned}\right\} \quad . \quad . \quad . \quad . \quad . \quad (1)$$

where H_1 and H_2 are homogeneous functions of the first degree, expressing the fact that there are constant returns to scale in both industries. Now

$$x_1 = \frac{\partial x_1}{\partial l_1} l_1 + \frac{\partial x_1}{\partial c_1} c_1$$

or

$$1 = \frac{l_1}{x_1}\frac{\partial x_1}{\partial l_1} + \frac{c_1}{x_1} \cdot \frac{\partial x_1}{\partial c_1}$$

We shall write $\epsilon^{x_1}_{l_1}$ for $\frac{l_1}{x_1} \cdot \frac{\partial x_1}{\partial l_1}$ and so on, so that we have

$$\epsilon^{x_1}_{l_1} + \epsilon^{x_1}_{c_1} = \epsilon^{x_2}_{l_2} + \epsilon^{x_2}_{c_2} = 1 \quad . \quad . \quad . \quad . \quad (2)$$

These expressions describe the fact that if, for example, a 10% increase in labour alone causes a 3% increase in output, then a 10% increase in capital alone must cause a 7% increase in output, because a 10% increase in both factors will cause a 10% increase in output.

In this situation l_1 will be paid a money wage (L_1) equal to $\frac{\partial x_1}{\partial l_1} l_1 \bar{x}_1$ or $\epsilon^{x_1}_{l_1} X_1$, and this will also be equal to the value of its marginal social net product. Capital in industry 1 will receive $X_1 - L_1$ which from equation (2) equals $\epsilon^{x_1}_{c_1} X_1$, which is also equal to the value of capital's marginal social net product, so that in this case we have

$$L_1 = \bar{L}_1 = \epsilon^{x_1}_{l_1} X_1 \qquad L_2 = \bar{L}_2 = \epsilon^{x_2}_{l_2} X_2$$
$$C_1 = \bar{C}_1 = \epsilon^{x_1}_{c_1} X_1 \qquad C_2 = \bar{C}_2 = \epsilon^{x_2}_{l_2} X_2$$

Moreover, since $\epsilon^{x_1}_{l_1} = \frac{L_1}{X_1}$, we can measure $\epsilon^{x_1}_{l_1}$ from the proportion of the total product in industry, which goes to labour. And similarly for the measurement of $\epsilon^{x_1}_{c_1}$, $\epsilon^{x_2}_{l_2}$ and $\epsilon^{x_2}_{c_2}$.

III. Two Types of External Economy and Diseconomy

Such is the simplest competitive model. We intend now to consider cases where what is done in one industry reacts upon the conditions of production in the other industry in some way other than through the possible effect upon the prices of the product or of the factors in that other industry. All such reactions we shall describe as constituting external economies or diseconomies, because the individual entrepreneur in the first industry will take account of the effect of his actions only upon what happens inside the first industry (the internal effect), but will leave out of account the effect of his actions upon the output of the second industry, in which it may improve production (an external economy) or diminish production (an external diseconomy).

But the purpose of this note is to distinguish between two types of such external economies or diseconomies. The first type we shall call "unpaid factors of production," and the second the "creation of atmosphere." The essential difference between these two types of external economy or diseconomy is that in the first case there are still constant returns to scale for society as a whole, though not for the individual industry, whereas in the second case there are still constant returns to scale for each individual industry but not for society as a whole.

IV. Unpaid Factors

Suppose that in a given region there is a certain amount of apple-growing and a certain amount of bee-keeping and that the bees feed on the apple-blossom. If the apple-farmers apply 10% more labour, land and capital to apple-farming they will increase the output of apples by 10%; but they will also provide more food for the bees. On the other hand, the bee-keepers will not increase the output of honey by 10% by increasing the amount of land, labour and capital applied to bee-keeping by 10% unless at the same time the apple-farmers also increase their output and so the food of the bees by 10%. Thus there are constant returns to scale for both industries taken together: if the amount of labour and of capital employed both in apple-farming and bee-keeping are doubled, the output of both apples and honey will be doubled. But if the amount of labour and capital are doubled in bee-keeping alone, the output of honey will be less than doubled; whereas, if the amounts of labour and capital in apple-farming are doubled, the output of apples will be doubled and, in addition, some contribution will be made to the output of honey.

We call this a case of an unpaid factor, because the situation is due simply and solely to the fact that the apple-farmer cannot charge the bee-keeper for the bees' food, which the former produces for the latter. If social-accounting institutions were such that this charge could be made, then every factor would, as in other competitive situations, earn the value of its marginal social net product. But as it is, the apple-farmer provides to the bee-keeper some of his factors free of charge. The apple-farmer is paid less than the value of his marginal social net product, and the bee-keeper receives more than the value of his marginal social net product.

This situation is shown if industry 1 represents bee-keeping and industry 2 apple-farming and if we replace equations (1) and (2) with

$$\left.\begin{aligned} x_1 &= H_1(l_1, c_1, x_2) \\ x_2 &= H_2(l_2, c_2) \end{aligned}\right\} \quad . \quad . \quad . \quad (4)$$

$$\text{so that} \qquad \epsilon^{x_1}_{l_1} + \epsilon^{x_1}_{c_1} + \epsilon^{x_1}_{x_2} = \epsilon^{x_2}_{l_2} + \epsilon^{x_2}_{c_2} = 1$$

In this case l_1 will be paid the value of its marginal social net product, and we have $L_1 = \bar{L}_1 = \epsilon^{x_1}_{l_1} X_1$. c_1 will be paid $X_1 - L_1$ or $\epsilon^{x_1}_{c_1} X_1 + \epsilon^{x_1}_{x_2} X_2$; but $\epsilon^{x_1}_{c_1} X_1$ is the value of c_1's marginal social net product, so that we have $C_1 = \bar{C}_1 + \epsilon^{x_1}_{c_1} X_1$. In other words, c_1 will have to have its earnings taxed at an *ad valorem* rate of $\frac{X_1}{C_1}\epsilon^{x_1}_{x_2}$ in order to be paid a net reward equal to the value of its marginal social net product.

But, on the other hand, l_2 and c_2 will be paid just so much less than the value of their marginal social net products.

$$\begin{aligned} \bar{L}_2 &= l_2\left(\bar{x}_2 \frac{\partial x_2}{\partial l_2} + \bar{x}_1 \frac{\partial x_1}{\partial x_2} \cdot \frac{\partial x_2}{\partial l_2}\right) \\ &= \epsilon^{x_2}_{l_2} X_2 \left(1 + \frac{X_1}{X_2}\epsilon^{x_1}_{x_2}\right) \end{aligned}$$

But l_2 will receive only $\epsilon^{x_2}_{l_2} X_2$, so that $\bar{L}_2 = L_2\left(1 + \frac{X_1}{X_2}\epsilon^{x_1}_{x_2}\right)$ and the wages of labour in apple-farming will need to be subsidised at an *ad valorem* rate of $\frac{X_1}{X_2}\epsilon^{x_1}_{x_2}$ in order to equate rewards to the value of the factor's marginal social net product. Similarly, $\bar{C}_2 = C_2\left(1 + \frac{X_1}{X_2}\epsilon^{x_1}_{x_2}\right)$, and the same *ad valorem* rate of subsidy should be paid to the earnings of capital in apple-farming. Since

$C_2 + L_2 = X_2$, the total tax revenue of $X_1\epsilon^{x_1}_{x_2}$ raised on C_1 will be equal to the two subsidies of $C_2\frac{X_1}{X_2}\epsilon^{x_1}_{x_2}$ and $L_2\frac{X_1}{X_2}\epsilon^{x_1}_{x_2}$.[1] In order to discover the appropriate rates of tax and subsidy the essential factor which will need to be estimated is $\epsilon^{x_1}_{x_2}$, the percentage effect on the output of honey which a 1% increase in the output of apples would exercise.

Now the relationship which we have just examined might be a reciprocal one. While the apples may provide the food of the bees, the bees may fertilise the apples.[2] Once again we may have constant returns to scale for society as a whole; a 10% increase in all factors in both industries would cause a 10% increase in the output of both products. In this case instead of equations (4) we should have

$$\left.\begin{aligned} x_1 &= H_1(l_1, c_1, x_2) \\ x_2 &= H_2(l_2, c_2, x_1) \\ \epsilon^{x_1}_{l_1} + \epsilon^{x_1}_{c_1} + \epsilon^{x_1}_{x_2} &= \epsilon^{x_2}_{l_2} + \epsilon^{x_2}_{c_2} + \epsilon^{x_2}_{x_1} = 1 \end{aligned}\right\} \quad . \quad . \quad (5)$$

By a process similar to that adopted in the previous case we can obtain formulæ to show what subsidies and taxes must be imposed in order to equate each factor's income in each industry to the value of its marginal social net product.

We can obtain the actual rewards of the factors in exactly the same way as in the previous example. Labour in industry 1 will obtain a wage equal to the value of its marginal private net product or $\bar{x}_1\frac{\partial x_1}{\partial l_1}$, so that $L_1 = \epsilon^{x_1}_{l_1}X_1$. Capital in industry 1 will receive the remainder, or $X_1 - L_1$, so that from equations (5) $C_1 = X_1(\epsilon^{x_1}_{c_1} + \epsilon^{x_1}_{x_2})$. Similarly, $L_2 = \epsilon^{x_2}_{l_2}X_2$ and $C_2 = X_2(\epsilon^{x_2}_{c_2} + \epsilon^{x_2}_{x_1})$.

To obtain expressions for the value of each factor's marginal social net product we have now to allow for the repercussions of each industry upon the other. Thus the value of the marginal social net product of labour in apple-farming includes not only the increased output of apples directly produced but also the increased output of honey caused by this increase in apple-output plus the further increase in apple-output due to this increase in honey-output plus the still further increase in honey-output due to this

[1] In this case it would, of course, have exactly the same effect if the subsidy were paid not on the wages of labour and profits of capital in apple-farming but at the same *ad valorem* rate on the value of the apple-output, X_2.

[2] If the bees had a bad effect upon the apples, then we should have an external diseconomy, which may be regarded as an unpaid negative factor of production. The bee-keepers, in addition to getting the bee-food free of charge, are also not charged for some damage which they do to the apple-farmers. In what follows $\epsilon^{x_2}_{x_1}$ would be < 0, so that $\epsilon^{x_2}_{l_2} + \epsilon^{x_2}_{c_2} > 1$.

increase in apple-output and so on in an infinite progression. The final result can be obtained in the following manner. Differentiating the main equations in equations (5), we have

$$dx_1 = \frac{\partial x_1}{\partial l_1} dl_1 + \frac{\partial x_1}{\partial c_1} dc_1 + \frac{\partial x_1}{\partial x_2} dx_2$$

$$dx_2 = \frac{\partial x_2}{\partial l_2} dl_2 + \frac{\partial x_2}{\partial c_2} dc_2 + \frac{\partial x_2}{\partial x_1} dx_1$$

If we keep c_1, l_2 and c_2 constant ($dc_1 = dl_2 = dc_2 = 0$) but allow l_1 to vary ($dl_1 \neq 0$), dx_1 and dx_2 will give the marginal social net products of l_1 in the two commodities. We obtain

$$\frac{dx_1}{dl_1} = \frac{\dfrac{\partial x_1}{\partial l_1}}{1 - \dfrac{\partial x_1}{\partial x_2} \cdot \dfrac{\partial x_2}{\partial x_1}} \quad \text{and} \quad \frac{dx_2}{dl_1} = \frac{\dfrac{\partial x_2}{\partial x_1} \cdot \dfrac{\partial x_1}{\partial l_1}}{1 - \dfrac{\partial x_1}{\partial x_2} \cdot \dfrac{\partial x_2}{\partial x_1}}$$

But

$$\begin{aligned} \bar{L}_1 &= l_1 \bar{x}_1 \frac{dx_1}{dl_1} + l_1 \bar{x}_2 \frac{dx_2}{dl_1} \\ &= l_1 \frac{\partial x_1}{\partial l_1} \frac{\bar{x}_1 + \bar{x}_2 \dfrac{\partial x_2}{\partial x_1}}{1 - \dfrac{\partial x_1}{\partial x_2} \cdot \dfrac{\partial x_2}{\partial x_1}} \\ &= L_1 \frac{1 + \dfrac{X_2}{X_1} \cdot \epsilon^{x_1}_{x_1}}{1 - \epsilon^{x_1}_{x_2} \epsilon^{x_2}_{x_1}} \end{aligned}$$

Similarly, we get the following expressions for the values of the marginal social net products of the other factors.

$$\bar{L}_2 = L_2 \frac{1 + \dfrac{X_1}{X_2} \epsilon^{x_1}_{x_2}}{1 - \epsilon^{x_1}_{x_2} \epsilon^{x_2}_{x_1}}$$

$$\bar{C}_1 = \epsilon^{x_1}_{c_1} X_1 \frac{1 + \dfrac{X_2}{X_1} \epsilon^{x_2}_{x_1}}{1 - \epsilon^{x_1}_{x_2} \epsilon^{x_2}_{x_1}} = (C_1 - \epsilon^{x_1}_{x_2} X_1) \frac{1 + \dfrac{X_2}{X_1} \epsilon^{x_2}_{x_1}}{1 - \epsilon^{x_1}_{x_2} \epsilon^{x_2}_{x_1}}$$

$$\bar{C}_2 = (C_2 - \epsilon^{x_2}_{x_1} X_2) \frac{1 + \dfrac{X_1}{X_2} \epsilon^{x_1}_{x_2}}{1 - \epsilon^{x_1}_{x_2} \epsilon^{x_2}_{x_1}}$$

On these expressions we can make the following three comments:

First, remembering that $L_1 + C_1 = X_1$ and $L_2 + C_2 = X_2$, we can see from the above expressions that $\bar{L}_1 + \bar{L}_2 + \bar{C}_1 + \bar{C}_2 = X_1 + X_2$. In other words, if the factors were all paid rewards equal to the value of their marginal social net products, this would absorb the whole of the product, neither more nor less. This is due, of course, to the essential constant-returns nature of the production functions at equations (5), from which it can be seen

that if l_1, l_2, c_1 and c_2 were to increase by 10%, then the production conditions would be satisfied if both outputs also increased by 10%. In other words, we are still dealing with a pure unpaid-factor case; there is no adding-up problem for society; every factor can be given a reward equal to the value of its marginal social net product if the revenue from the taxes levied on those which ought to be taxed is used to subsidise the earnings of those which ought to be subsidised.

Secondly, $\bar{L}_1$, $\bar{L}_2$, $\bar{C}_1$ and $\bar{C}_2$ are all seen to be positive finite quantities, provided that $\epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1} < 1$. From the last of equations (5) it can be seen that $\epsilon^{x_1}_{x_2}$ and $\epsilon^{x_2}_{x_1}$ are both < 1; it requires a 10% increase of land, labour and apple-blossom to increase the output of honey by 10%, so that a 10% increase in the supply of apple-blossom alone will increase the output of honey by less than 10%. But $\epsilon^{x_1}_{x_2}$ and $\epsilon^{x_2}_{x_1}$ are both positive, since we are dealing with external economies and not diseconomies. It follows, therefore, that $0 < \epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1} < 1$, so that $\bar{L}_1$, $\bar{L}_2$, $\bar{C}_1$ and $\bar{C}_2$ are all positive finite quantities. It is because $\epsilon^{x_1}_{x_2}$ and $\epsilon^{x_2}_{x_1}$ are both positive fractions that the infinite progression of an increase in apple-output causing an increase in honey-output, causing an increase in apple-output and so on, adds up only to a finite sum. For example, if both $\epsilon^{x_1}_{x_2}$ and $\epsilon^{x_2}_{x_1}$ are one-half, a 10% increase in apple-output causes a 5% increase in honey-output, but this 5% increase in honey-output causes only a $2\frac{1}{2}$% increase in apple-output; which causes only a $1\frac{1}{4}$% increase in honey-output and so on in a diminishing geometric progression.

Thirdly, from the above expressions for L_1 and $\bar{L}_1$, we obtain

$$\frac{\bar{L}_1 - L_1}{L_1} = \frac{\frac{X_2}{X_1}\epsilon^{x_2}_{x_1} + \epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}}{1 - \epsilon^{x_1}_{x_1}\epsilon^{x_2}_{x_2}}$$

which shows the *ad valorem* rate of subsidy which must be paid to l_1 to bring its earnings up to the value of its marginal social net product. We can obtain a similar expression for the rates of tax levyable upon C_1.

$$\frac{C_1 - \bar{C}_1}{C_1} = \frac{\epsilon^{x_1}_{x_2}\frac{X_1}{C_1} - \frac{X_2}{X_1}\epsilon^{x_2}_{x_1} + \frac{X_2 - C_1}{C_1}\epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}}{1 - \epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}}$$

Corresponding expressions for $\frac{\bar{L}_2 - L_2}{L_2}$ and $\frac{C_2 - \bar{C}_2}{C_2}$ can be obtained by interchanging the subscripts 1 and 2. It can be seen from adding $C_1 - \bar{C}_1$ and $C_2 - \bar{C}_2$ that there will be a positive tax revenue raised from capital as a whole. But either $C_1 - \bar{C}_1$

or $C_2 - \overline{C}_2$ might be negative, *i.e.*, a subsidy might be payable on the earnings of capital in one of the two industries as well as upon the earnings of labour in both of the industries. For example, $C_2 - \overline{C}_2$ would be <0 if $\epsilon^{x_1}_{x_2}$ were very large relatively to $\epsilon^{x_2}_{x_1}$. This would mean, for example, that the production of honey (industry 1) did very little to help the production of apples (industry 2), while the production of apples did much to help the production of bees. Capitalists in apple-farming should be subsidised because the unpaid benefits which they confer upon the bee-keepers more than outweigh the unpaid benefits which they receive from labour and capital employed in bee-keeping. Indeed, all the results obtained from equations (4) can be obtained from the expressions derived from equations (5) by writing $\epsilon^{x_1}_{x_2} = 0$.

V. The Creation of Atmosphere

A distinction must be drawn between a "factor of production" and a physical or social "atmosphere" affecting production. We may take the rainfall in a district as a typical example of atmosphere. The rainfall may be deficient in the sense that a higher rainfall would increase the farmers' output, but nevertheless what rainfall there is will be available to all farms in the district regardless of their number. Thus if in the district in question the amount of land, labour and capital devoted to, say, wheat-farming were to be increased by 10%, the output of wheat would also be increased by 10% even if the rainfall were to remain constant. This is quite different from the case of a factor of production for which no payment is made; in our previous example, a 10% increase in the output of apples (and so in the supply of apple-blossom) would be necessary, in addition to a 10% increase in the amount of land, labour and capital devoted to bee-keeping, if the output of honey is to be increased by 10%. In these examples, rainfall is an "atmosphere" for wheat-farming; but the output of apples is an "unpaid factor of production" for bee-keeping.

The distinction should now be clear. Both a factor of production and an atmosphere are conditions which affect the output of a certain industry. But the atmosphere is a fixed condition of production which remains unchanged for all producers in the industry in question without anyone else doing anything about it, however large or small—within limits—is the scale of operations of the industry. On the other hand, the factor of production is an aid to production which is fixed in amount, and which is therefore available on a smaller scale to each producer in the industry

if the number of producers increases, unless someone does something to increase the total supply of the factor.

The external economies which we have examined in the last section are concerned with factors of production for which the individual producer pays nothing. We must turn now to external economies and diseconomies which are due to the fact that the activities of one group of producers may provide an atmosphere which is favourable or unfavourable to the activities of another group of producers. For example, suppose that afforestation schemes in one locality increase the rainfall in that district and that this is favourable to the production of wheat in that district. In this case the production of timber creates an atmosphere favourable to the production of wheat.

In these cases there is an adding-up problem for society as a whole. There may be constant returns to the factors of production employed in either industry alone. That is to say, a 10% increase in the amounts of land, labour and capital employed in producing wheat might, in any given atmosphere, result in a 10% increase in the output of wheat. And a 10% increase in the amount of land, labour and capital employed in producing timber might, apart from its effect in changing the atmosphere for wheat-farmers, cause a 10% increase in the output of timber. It follows that a 10% increase in the amount of land, labour and capital employed both in the timber industry and in wheat-farming will increase the output of timber by 10% and the output of wheat by more than 10% (because of the improvement in the atmosphere for wheat producers). To society as a whole there are now increasing returns to scale; to pay every factor a reward equal to the value of its marginal social net product will account for more than the total output of the two industries; revenue will have to be raised from outside sources by general taxation if subsidies are to be paid on a scale to bring every factor's reward up to the value of its marginal social net product.

We can express this sort of situation by the following equations:

$$\left.\begin{aligned} x_1 &= H_1(l_1, c_1)A_1(x_2) \\ x_2 &= H_2(l_2, c_2) \end{aligned}\right\} \quad . \quad . \quad . \quad (6)$$

where once more

$$\epsilon^{x_1}_{l_1} + \epsilon^{x_1}_{c_1} = \epsilon^{x_2}_{l_2} + \epsilon^{x_2}_{c_2} = 1.$$ [1]

[1] Since $l_1 \frac{\partial H_1}{\partial l_1} = \frac{l_1}{H_1 A_1} \cdot \frac{A_1 \partial H_1}{\partial l_1} H_1 = \frac{l_1}{x_1} \cdot \frac{\partial x_1}{\partial l_1} H_1 = \epsilon^{x_1}_{l_1} H_1$, we have $H_1 = \epsilon^{x_1}_{l_1} H_1 + \epsilon^{x_1}_{c_1} H_1$, so that $1 = \epsilon^{x_1}_{l_1} + \epsilon^{x_1}_{c_1}$.

$x_2 = H_2(l_2, c_2)$ is the ordinary competitive constant-returns production function for the timber industry. There is the same type of production function for the wheat industry; but in this case the output due to the use of labour and land ($H_1[c_1, l_1]$) is subject to an atmosphere (A_1). If the atmosphere is favourable then $H_1(l_1, c_1)$ is multiplied up by a large factor to give the actual output (x_1). In the case which we are examining the atmosphere for the wheat industry (A_1) is made to depend upon the output of the timber industry ($A_1 = A_1[x_2]$).

The atmosphere factor (A_1) is thus subject to the following conditions. $A_1(0) = 1$, *i.e.*, we define our terms in such a way that $H_1(l_1, c_1)$ is equal to what the output of wheat would be if there were no timber output. A_1 is always >0, *i.e.*, there cannot be so powerful an external diseconomy that the output of the industry affected becomes negative. When $A_1(x_2) > 1$, then there is an average external economy, *i.e.*, the output of wheat is greater than it would have been had there been a zero output of timber instead of a positive output (x_2); and similarly, when $A_1(x_2) < 1$, there is an average external diseconomy. When $A_1'(x_2)$ is >0, then there is a marginal external economy, *i.e.*, the output of wheat would be improved by a further increase in the output of timber; and when $A_1'(x_2)$ is <0, there is a marginal external diseconomy.

The actual rewards of the factors of production are easily seen to be $L_1 = \epsilon^{x_1}_{l_1} X_1$, $C_1 = X_1 - L_1 = \epsilon^{x_1}_{c_1} X_1$, $L_2 = \epsilon^{x_2}_{l_2} X_2$ and $C_2 = X_2 - L_2 = \epsilon^{x_2}_{c_2} X_2$. In the case of the factors employed in wheat-farming (industry 1) there will be no divergence between the reward paid and the value of the marginal social net product; and $L_1 = \bar{L}_1$ and $C_1 = \bar{C}_1$.

But the rewards actually paid to the factors of production in the timber industry (industry 2) will be lower than the value of their marginal social net products because they will not be paid for the favourable atmosphere which they create for wheat farmers. Thus

$$\bar{L}_2 = \epsilon^{x_2}_{l_2} X_2 + l_2 \bar{x}_1 \frac{\partial x_1}{\partial x_2} \cdot \frac{\partial x_2}{\partial l_2}$$

$$= L_2 \left(1 + \frac{X_1}{X_2} \cdot \epsilon^{x_1}_{x_2}\right)$$

where $\epsilon^{x_1}_{x_2} = \frac{x_2}{x_1} \cdot \frac{\partial x_1}{\partial x_2}$ or $\frac{x_2}{A_1} \cdot \frac{\partial A_1}{\partial x_2}$, the percentage increase in the output of wheat which would be brought about by a 1% increase in the output of timber through the improvement in the atmos-

phere for wheat production. And similarly, it can be shown that $\bar{C}_2 = C\left(1 + \frac{X_1}{X_2}\epsilon^{x_1}_{x_2}\right)$. In other words, the earnings of both l_2 and c_2 or, alternatively, the price of the product x_2 must be subsidised from general revenue at the *ad valorem* rate of $\frac{X_1}{X_2}\epsilon^{x_1}_{x_2}$ if all factors are to receive rewards equal to the value of their marginal social net products.

As in the case of unpaid factors, these reactions of one industry upon the other may be reciprocal. Industry 1 may create a favourable or unfavourable atmosphere for industry 2, as well as industry 2 for industry 1. In this case we have

$$\left.\begin{aligned} x_1 &= H_1(l_1, c_1)A_1(x_2) \\ x_2 &= H_2(l_2, c_2)A_2(x_1) \\ \epsilon^{x_1}_{l_1} + \epsilon^{x_1}_{c_1} &= \epsilon^{x_2}_{l_2} + \epsilon^{x_2}_{c_2} = 1 \end{aligned}\right\} \quad . \quad . \quad . \quad (7)$$

where

Here again $L_1 = \epsilon^{x_1}_{l_1}X_1$, $C_1 = X_1 - L_1 = \epsilon^{x_1}_{c_1}X_1$, $L_2 = \epsilon^{x_2}_{l_2}X_2$ and $C_2 = X_2 - L_2 = \epsilon^{x_2}_{c_2}X_2$.

But when we come to consider the marginal social net product, we have to take into account the infinite chain of action and reaction of the one industry upon the other, as in the case of apple-growing and bee-keeping examined above. The marginal social net product of l_1, for example, is obtained by differentiating the first two of equations (7), keeping l_2, c_1 and c_2 all constant. We obtain

$$\frac{dx_1}{dl_1} = \frac{\epsilon^{x_1}_{l_1} \cdot \frac{x_1}{l_1}}{1 - \epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}} \quad \text{and} \quad \frac{dx_2}{dl_1} = \frac{\epsilon^{x_1}_{l_1}\epsilon^{x_2}_{x_1} \cdot \frac{x_2}{l_1}}{1 - \epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}}$$

Now $\bar{L}_1 = l_1\bar{x}_1\frac{dx_1}{dl_1} + l_1\bar{x}_2\frac{dx_2}{dl_1}$, so that $\frac{\bar{L}_1}{L_1} = \frac{1 + \frac{X_2}{X_1}\epsilon^{x_2}_{x_1}}{1 - \epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}}$

Similarly, we can show that $\frac{\bar{C}_1}{C_1} = \frac{\bar{L}_1}{L}$ and that

$$\frac{\bar{L}_2}{L_2} = \frac{\bar{C}_2}{C_2} = \frac{1 + \frac{X_1}{X_2}\epsilon^{x_1}_{x_2}}{1 - \epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}}$$

In other words, in order that each factor should obtain a reward equal to the value of its marginal social net product both labour and capital in industry 1, or alternatively, the price of the product

of industry 1, should be subsidised at the *ad valorem* rate of $\epsilon^{x_1}_{x_2}\dfrac{\dfrac{X_2}{X_1}+\epsilon^{x_1}_{x_2}}{1-\epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}}$; and similarly, in industry 2 a rate of subsidy of $\epsilon^{x_2}_{x_1}\dfrac{\dfrac{X_1}{X_2}+\epsilon^{x_2}_{x_1}}{1-\epsilon^{x_1}_{x_2}\epsilon^{x_2}_{x_1}}$ should be paid.

So far throughout this note we have assumed that in all external economies or diseconomies, whether of the unpaid-factor or of the atmosphere-creating kind, it is the *output* of one industry which affects production in the other. But this is, of course, not necessarily the case. It may be the employment of one *factor* in one industry which confers an indirect benefit or the reverse upon producers in the other industry.[1] Moreover, in the case in which atmosphere is created, the output of industry 2 may create an atmosphere for industry 1 which increases the efficiency of a particular *factor* in industry 1 rather than the general level of *output*.[2] Or the employment of a particular *factor* in industry 2 might create conditions which improved the efficiency of a particular factor in industry 1.[3] And any combination of these indirect effects of industry 2 upon industry 1 might be combined with any other combination of such effects of industry 1 on industry 2. Clearly, we cannot consider in detail all the very many possibilities.

But consider the following particular case :

$$\left.\begin{aligned} x_1 &= H_1(\lambda_1, c_1)\\ x_2 &= H_2(\lambda_2, c_2)\\ \lambda_1 &= l_1 A(l)\\ \lambda_2 &= l_2 A(l)\\ l &= l_1 + l_2 \end{aligned}\right\} \quad . \quad . \quad . \quad . \quad . \quad (8)$$

where l_1 = the number of workers employed in industry 1 and λ_1 = the equivalent number of workers of an efficiency which an individual worker would have if the total labour force were very small ($l \to 0$, so that $A \to 1$.)

This is the case where the total labour force in the two industries (l) affects the general efficiency of labour. We may suppose that, up to a certain point, a growth in the absolute size

[1] In this case we should have equations of the type of $x_1 = H_1(l_1, c_1, l_2)$ in the case of unpaid factors, and of the type of $x_1 = H_1(l_1, c_1)A_1(l_2)$ in the case of atmosphere-creation.

[2] In this case the equations would be of the type $x_1 = H_1\{l_1 A_1(x_2), c_1\}$.

[3] For example, $x_1 = H_1\{l_1 A(c_2), c_1\}$.

of the labour force employed in these two industries causes a general atmosphere favourable to the efficiency of labour by enabling workers to communicate to each other a certain know-how about, and interest in, the mechanical processes which are common to the two industries.

Now the individual employer in any one firm in either industry will regard A as being unaffected by his own actions, because the indirect effect which an increase in the number of workers employed by him alone will have upon the general efficiency of his own labour will be a negligible quantity. He will go on taking on labour of any given level of efficiency until the wage paid to a unit of labour is equal to the price paid for its marginal product at that level of efficiency. In other words,

$$L_1 = \lambda_1 \bar{x}_1 \frac{\partial x_1}{\partial \lambda_1} = \epsilon^{x_1}_{\lambda_1} X_1$$

The reward paid to c_1 will be $C_1 = X_1 - L_1 = \epsilon^{x_1}_{c_1} X_1$.
Similarly, $L_2 = \epsilon^{x_2}_{\lambda_2} X_2$ and $C_2 = \epsilon^{x_2}_{c_2} X_2$.

In this case $\bar{C}_1 = \epsilon^{x_1}_{c_1} X_1$ and $\bar{C}_2 = \epsilon^{x_2}_{c_2} X_2$ because there are no external economies or diseconomies involved in decisions to apply more capital in either industry, so that $C_1 = \bar{C}_1$ and $C_2 = \bar{C}_2$.

But in evaluating the value of the marginal social net product of labour we have to take into account the effect which the employment of more labour by one particular employer may have upon the efficiency of labour for all other employers in industry 1 and for all other employers in industry 2. The value of the marginal social net product exceeds the wage which will be offered for it by these two sums, so that

$$\bar{L}_1 = L_1 + l_1 \bar{x}_1 \frac{\partial x_1}{\partial \lambda_1} \cdot \frac{\partial \lambda_1}{\partial l} \cdot \frac{\partial l}{\partial l_1} + l_1 \bar{x}_2 \frac{\partial x_2}{\partial \lambda_2} \cdot \frac{\partial \lambda_2}{\partial l} \cdot \frac{\partial l}{\partial l_1}.$$

Since $\frac{\partial l}{\partial l_1} = 1$, $\frac{\partial \lambda_1}{\partial l} = \frac{\lambda_1}{A} \cdot \frac{\partial A}{\partial l}$, and $\frac{\partial \lambda_2}{\partial l} = \frac{\lambda_2}{A} \cdot \frac{\partial A}{\partial l}$,

we have $\bar{L}_1 = L_1 + (L_1 + L_2) \frac{l_1}{l} \epsilon^A_l$, where $\epsilon^A_l = \frac{l}{A} \cdot \frac{dA}{dl}$.

Similarly, $\bar{L}_2 = L_2 + (L_1 + L_2) \frac{l_2}{l} \epsilon^A_l$. Now if the wage-rate is the same in both industries so that $\frac{l_1}{l} = \frac{L_1}{L_1 + L_2}$ and $\frac{l_2}{l} = \frac{L_2}{L_1 + L_2}$, we have $\frac{\bar{L}_1}{L_1} = \frac{\bar{L}_2}{L_2} = 1 + \epsilon^A_l$. The employment of labour in both industries must be subsidised at the *ad valorem* rate of ϵ^A_l, if rewards are to be raised to the value of marginal social net products.

VI. Conclusion

It is not claimed that this division of external economies and diseconomies into unpaid factors and the creation of atmosphere is logically complete. External economies exist whenever we have production functions of the form

$$x_1 = F_1(l_1, c_1, l_2, c_2, x_2)$$
$$x_2 = F_2(l_2, c_2, l_1, c_1, x_1)$$

where F_1 and F_2 are not necessarily homogeneous of the first degree. But it is claimed that it may clarify thought on different types of external economy and diseconomy to distinguish thus between: (1) those cases in which there are constant returns for society, but not necessarily constant returns in each industry to the factors which each industry employs and pays for, and (2) those cases in which there are constant returns in each industry to those factors which it controls and pays for, but in which there are not constant returns for the two industries taken together, the scale of operations being important in the one industry because of the atmosphere which it creates for the other. One of the most important conclusions to be drawn is that in the case of type (1)—the unpaid-factor case—there is no adding-up problem for society as a whole; in order to pay every factor a reward equal to the value of its marginal social net product some factors must be taxed and others subsidised, and the revenue from the appropriate taxes will just finance the expenditure upon the appropriate subsidies. But in the case of the creation of atmosphere (type (2)) the subsidies (or taxes) required to promote (or discourage) the creation of favourable (or unfavourable) atmosphere are net additions to (or subtractions from) society's general fiscal burden. But, in fact, of course, external economies or diseconomies may not fall into either of these precise divisions and may contain features of both of them.

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THE INFLUENCE OF PRODUCTIVITY ON ECONOMIC WELFARE

1. It is a well-known old thesis that an *increase in labour productivity leads to an increase in economic "welfare."* Assuming for a while that the meaning of these two concepts is clear, we may say that the statement is correct for a Robinson Crusoe economy as we know it from our books. If Crusoe can get more products for the same effort, then probably he will shorten somewhat his working-day and get more products, and by doing so feel happier. The statement seems guaranteed for an economy: (i) without foreign trade, (ii) without working-hours regulations, (iii) without problems of capital scarcity and (iv) without monetary complications.

Many times already, however, doubt has arisen concerning the validity of that thesis. There are the old nineteenth-century discussions on technological unemployment, and we all know their modern versions from the thirties. During the recent full-employment years the old optimism as to the consequences of increased productivity has been revived. Only quite recently new reasons for some qualifications have come up, among other things in connection with problems of capital scarcity and balance-of-payments equilibrium. I propose to reformulate some of these qualifications to the old thesis. This may prove to be of some use to practical policy in the field of productivity-furthering measures, now very much in the centre of public interest. In order to avoid misunderstanding I want to stress from the outset, however, that in its essence I consider the thesis as sound; we should be careful, however, not to apply it mechanically.

2. As is usual in economic science, much depends on a careful *statement of the problem* we want to consider. Discussing the influence of an increase in labour productivity on welfare first of all implies that we consider labour productivity as one of the *data* to the economy considered. This, I think, can be easily admitted. The next thing we have to do is to give a clear definition of what we understand by "*welfare.*" This is already less simple. I do not propose to go into all the well-known questions of comparability of individual utilities; [1] I want to

[1] For a very clear summary of these problems, cf. Nancy Ruggles, "Recent Developments in the Theory of Marginal Cost Pricing," *Review of Economic Studies*, 1949–50, Vol. XVII (2), No. 43, pp. 107–26.

take a "practical" point of view as my starting point. We may say, then, that perhaps the best single figure representing a nation's welfare is the value of its *real expenditure* on consumer and investment goods (to be written as x in what follows). But welfare cannot be considered essentially as a one-dimensional concept; and at least some rough indications about the distribution of x over certain groups of the population are needed in order to complement the figure x. I propose that two further figures are very useful: first, total real labour income L' as an indication of the distribution between the two big "classes" of society and, second, employment a as an indication of the distribution between employed and unemployed.

The way in which these figures should be used in order to judge a change in the economy is different from the way in which we look at x. Here it is not so that L' and a should be a maximum, but they may have optimum values. It is well known that any judgment on these figures is even more a matter of taste than a judgment on x. But serious declines in L' or a generally should be a matter of concern.

It seems useful already to point to one feature of our main measure of welfare: real expenditure of a nation. This measure x is not identical with the concept of the nation's product. For the product to become the nation's expenditure it is necessary to be exchanged, partially at least, at the world market. And this exchange, in dependence of the terms of trade prevailing, may change its value in a different way with one level of productivity than with another. An isolated increase in productivity will, generally speaking, worsen the country's terms of trade and hence the relation between real expenditure and product.

3. The third element in a careful statement of our problem consists in the set of hypotheses we introduce with regard to the *structure of the economy* considered. This concept we want to give a rather wide meaning. Not only have we to include in our concept of structure the particulars about the type of products and of productive agents characteristic of the country and the behaviour of its citizens as portrayed by the demand and supply functions, etc., but we have also to include hypotheses as to the *governmental policy* pursued, and, perhaps, as to what I want to call *group behaviour*. In modern economies the consequences of certain changes in data, such as an increase in productivity, not only evoke individual reactions implied in the set of demand and supply relations, but also collective reactions as, *e.g.*, govern-

ment measures to protect the balance of payments, trade-union demands as to wages, demands by organised farmers as to farm prices, etc., and it is sometimes useful to distinguish between individual and collective policies.

Finally, when stating our problem we shall also have to pay attention to whether we think of short-run or of long-run reactions.

4. In terms which are customary nowadays this comes to saying that the consequences of an increase in labour productivity depend on the model we use. It is the purpose of this paper to present a number of models each of which may throw some light on our main problem. Some of these models (I, II and VIII) will be described in full; for the others the reader will be referred to other publications of the author. Before giving more details and a treatment of our problem, we may summarise in Table I some of the features of the models to be presented.

TABLE I

Summary of Features of Models Used [1]

Model No.	Short (s)- or long (l)-run.	Foreign trade.	Capital as a limiting factor.	Number of products.	Balance of payments equilibrium.	Government or Group policies.			
						Instruments.			Targets.
						Wages.	Taxes.	Profit margins.	Target of policy indicated by +.
I	l	−	+	1	.	+	−	−	.
II	l	+	−	1	+	−	−	−	.
III	s	+	−	1	−	−	−	−	.
IV	s	+	−	1	+	+	−	−	"Social equilibrium"
V	s	+	−	1	+	−	+	−	Equilibrium in balance of payments
VI	s	+	−	1	−	−	+	−	Maintenance of employment
VII	s	+	−	1	−	−	−	+	Maintenance of employment
VIII	s	+	−	2	−	+	−	−	"Social equilibrium"

[1] + means present; − means absent; . means does not apply.

5. *Long-term, isolated-state, capital-shortage model* (I). The first model to be discussed represents an attempt to portray the pure form of technological unemployment; in order to concentrate on this phenomenon the complications of short-term-spending reactions and of international-trade connections have been eliminated. Adopting the style of the old models used in production theory (J. B. Clark, Douglas), a barter economy is assumed to exist, where one product for general use is produced

by the combination of capital and labour. Capitalist and employer are the same person. The economy is a "multiple" of an optimum-size enterprise, working with a capital k of infinite fluidity, technically adapted to the optimum method of production. The range of possible methods between which the employer may choose is indicated by a function $h(i)$, where i is the "capital intensity" of a process, *i.e.*, the amount of capital needed in order to employ one man according to that method, and h is the productivity of that man. The curve $h = h(i)$ represents the "curve of the technical possibilities." The employer has to pay a real wage l to each worker employed; this wage he considers as given (free competition between employers at the labour market). Indicating total production of the enterprise by u, the employer will choose i such as to make his profit a maximum, *i.e.*, $u - al$; hence

$$\frac{du}{di} - l\frac{da}{di} = 0$$

where $u = ah(i)$ and $a = \frac{k}{i}$, or

$$\frac{d}{di}\left\{\frac{k}{i}h(i)\right\} - l\frac{d}{di}\frac{k}{i} = 0$$

It follows that

$$h' = \frac{h - l}{i} \quad . \quad . \quad . \quad . \quad . \quad . \quad (5.1)$$

meaning that the equilibrium point E at the curve of technical possibilities (cf. Fig. 1) has a tangent passing through the point $P(0, l)$. The production of one man is indicated by EQ, of which RQ is his wage. Total production is, as long as k is constant, represented by $tg \angle EOQ$.

The value of i, found from (5.1), determines how many workers $a = \frac{k}{i}$ will be absorbed. In its turn, i depends on the curve $h(i)$, as well as on the value of l. Suppose that in an initial position there is full employment.

6. Suppose now that, with total capital k per enterprise given, new technical possibilities are introduced, *i.e.*, a new curve $h(i)$ develops. What will happen depends on the shape of that curve. As long as wages are constant, it may very well happen that not all workers can be absorbed. Adaptation of l may be the consequence. But it may be that only at a wage-rate zero or a negative wage-rate will all labour be absorbed. If only the curve of technical possibilities is sufficiently steep in

its relevant parts, very strange things may happen (cf. Fig. 1, curve $h_1(i)$). The rather revolutionary changes in labour productivity represented by the change from curve h to curve h_1 are characterised by two features. First, there is an increase in productivity for all capital intensities considered; and secondly, the increase is particularly large for ranges of capital intensity higher than those used so far. This means that if considerable investments are made, unprecedented increases in productivity are possible. The picture has been suggested by the development in the United States [1] of new automats for

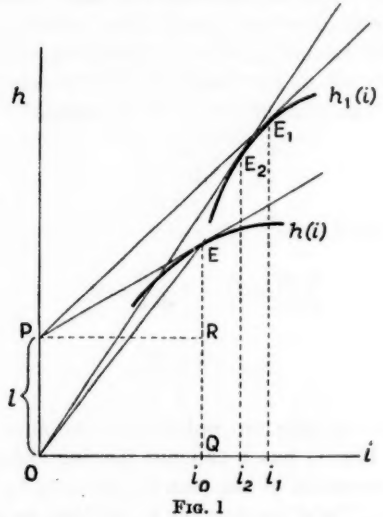

FIG. 1

which these features apply. Our picture shows that if such a development was general, a shift of E towards the right, *i.e.*, unemployment, would be the consequence. The causes for it could be formulated as capital scarcity. The new methods (using automats) are, in our picture, of such a productivity that private employers will irresistibly be driven towards their application, whereas at the same time they are so capital-intensive that only part of the workers can be employed, even if wage-rates are very low (point E_2).

What, then, happens to "welfare"? The first yardstick we proposed, total real expenditure, now coinciding with total production, may increase, even considerably, as in Fig. 1. But

[1] F. L. Polak, *De wentelgang der Wetenschap en de Maatschappij van morgen*, Leiden, 1949 (Dutch).

employment and total real labour income would fall considerably. The result for welfare would be dubious. It is even conceivable (cf. Fig. 2) that total production would fall and employment too. Here the result would be positively unfavourable for welfare.

7. *Long-term open-economy model* (II). As the next model we consider a nation with foreign trade, producing, with the aid of labour and organisation as productive agents, one product out of imported raw materials. The product is sold both at home and abroad. Monetary equilibrium, and hence equilibrium in the balance of payments, is maintained throughout. As the

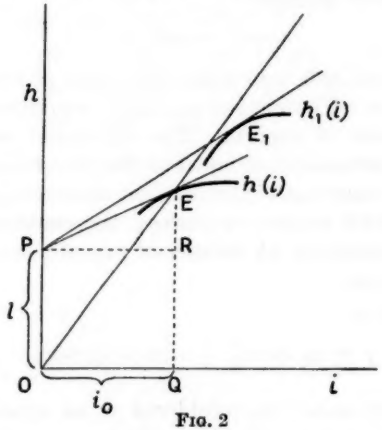

FIG. 2

data of the economy we consider, apart from the usual structural data, the degree of labour productivity h. Provisionally the wage-rate l and the autonomous profit margin π_0 (to be defined later) per unit of product are supposed to be independent of h. As the dependent variables of the system we consider: Y, national income in monetary units; X, national expenditure in monetary units; v, volume of production; x, real national expenditure; p, price level of product; L', real labour income; a, volume of employment.

We compare two situations, an initial one, in which $Y = X = y = x = p = a = h = l = 1$,[1] and one in which h shows a variation dh. We propose to determine the corresponding variations in the dependent variables, in particular in x, a and L', considered as measures of welfare.

[1] Cf. the model used and described in some detail in J. Tinbergen, *Econometrics*, The Blakiston Co., Philadelphia, 1951, §§ 44 ff.

Our structural relations are :

Income definition :

$$Y = (1 + \mu)yp - \mu yp^{\epsilon} \quad . \quad . \quad . \quad . \quad (7.1)$$

Here μ represents the nation's import quota, which we consider constant (a loss of generality which may be shown not to be relevant for our purpose), and ϵ represents the price elasticity of imports with respect to the price level of the product.

Home demand equation :

$$X = Y \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (7.2)$$

Foreign demand equation :

$$\mu yp^{-\epsilon} = \mu p^{1-\eta} \quad . \quad . \quad . \quad . \quad . \quad . \quad (7.3)$$

Here the left-hand side represents the value of imports, which, as a consequence of balance-of-payments equilibrium, must be equal to the value of exports. The right-hand side represents the value of exports, which is equal to the price level p multiplied by the demand function. The demand function $\mu p^{-\eta}$ shows an elasticity of η with respect to prices; the constant factor μ is found by the condition of balance-of-payments equilibrium in the initial situation.

Supply equation :

$$p = \pi_0 + \pi_1 \frac{l}{h} + \pi_2(y - 1) + \pi_3 \quad . \quad . \quad (7.4)$$

This equation should be considered as an approximation for small variations in the variables. It expresses the price level as a sum of the following components :

(i) the autonomous part of the profit margin π_0;

(ii) labour costs, where π_1 represents the marginal wage quota;

(iii) the automatic part of the profit margin, assumed to vary linearly with the volume of production, where π_2 represents the price flexibility in the initial situation; and

(iv) the import quota π_3, assumed constant in our problem.

Definition of home expenditure :

$$X = xp \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (7.5)$$

Definition of employment :

$$a = \frac{y}{h} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (7.6)$$

Definition of real labour income :

$$L' = \Lambda \frac{yl}{hp} \quad . \quad . \quad . \quad . \quad . \quad . \quad (7.7)$$

where Λ represents the ratio of labour income to national income in the initial situation.

8. From these equations we deduce :

$$\begin{aligned} dY &= (1+\mu)(dy+dp) - \mu dy - \mu\epsilon dp \\ &= dy + (1+\mu-\mu\epsilon)dp \\ dX &= dx + dp = XdY \therefore dx = dy + \mu(1-\epsilon)dp \quad . \quad (7.8) \end{aligned}$$

$$\mu dy + \mu(\epsilon+\eta-1)dp = 0$$

$$\therefore dy + (\epsilon+\eta-1)dp = 0 \quad . \quad . \quad . \quad . \quad (7.9)$$

$$dp = \pi_1(dl - dh) + \pi_2 dy + d\pi_0 \quad . \quad (7.10)$$

$$dL' = \Lambda(dy + dl - dh - dp) \quad . \quad . \quad (7.11)$$

$$da = dy - dh \quad . \quad . \quad . \quad . \quad . \quad . \quad (7.12)$$

Equations (7.8) to (7.12) enable us to calculate dx, da, dL', dy and dp as functions of the independent variations dh, dl and $d\pi_0$. For our purpose only the expressions for dx, da and dL' in terms of dh are relevant; hence we put $dl = d\pi_0 = 0$ and find :

$$dx = \pi_1 \frac{\eta - (1+\mu)(1-\epsilon)}{\pi_2(\epsilon+\eta-1)+1} dh \quad . \quad . \quad . \quad . \quad (7.13)$$

$$da = \frac{(\pi_1 - \pi_2)(\epsilon+\eta-1) - 1}{\pi_2(\epsilon+\eta-1)+1} dh \quad . \quad . \quad . \quad (7.14)$$

$$dL' = \frac{(\pi_1 - \pi_2)(\epsilon+\eta-1) + \pi_1 - 1}{\pi_2(\epsilon+\eta-1)+1} dh \quad . \quad (7.15)$$

It follows that the changes in each of our welfare indicators depend on the productivity change in a rather complicated way : the price elasticities of foreign trade, the price flexibility and the marginal labour quota entering into each relation, and the import quota in the first only. The signs of the coefficients will be different according to the numerical values of the data just enumerated. The reader may try several sets of values. Since the purpose of this model is to show some of the implications for countries with a considerable portion of foreign trade, we will substitute figures found to be a fair approximation to the situation in a small country like the Netherlands. It was found that $\pi_1 = 0{\cdot}3$; $\pi_2 = 0{\cdot}1$; $\eta = 2$; $\epsilon = 0{\cdot}3$ and $\mu = 0{\cdot}4$, leading to the formulæ : $dx = 0{\cdot}3\ dh$; $da = -0{\cdot}7\ dh$; $dL' = -0{\cdot}4\ dh$.

Total real expenditure therefore increases, but employment, as well as real wage income, decrease with increasing productivity.

The influence on "welfare" therefore depends on how heavily the decrease in employment and labour income count for us. Moreover, it is interesting to note that even $dx<0$ for $0{\cdot}7\eta + \epsilon<1$, *i.e.*, for values of the elasticities considerably less stringent than the well-known "critical values" in the unstable balance-of-payments case.[1]

9. *Short-run open-economy models* (III–VIII). The models to be discussed in what follows are all short-run models in the sense that expenditures are supposed to react on income changes in the Keynesian way. This means that equation (7.2) of the previous model is replaced by a more general one :

$$x = L' + (1 - \sigma)Z' + c' \quad . \quad . \quad . \quad . \quad (9.1)$$

where Z' is real entrepreneurial income, σ their "marginal propensity not to spend" and c' a constant; c' depends on the initial situation. This model has been used for other purposes and described elsewhere.[2] Apart from slight differences that are irrelevant for the present purpose, the other relations in it are based on the same assumptions as in Model II.

In some of the versions there are, however, added one or two further variables representing instruments of economic policy that may possibly interfere with our problem and contribute to the consequences of an increase in labour productivity. In Model III no such additional instruments are considered, but since balance-of-payments equilibrium is no longer presupposed, the deficit D on current account of this balance is an additional symbol used.

Dealing with the equations in the same way as in the previous model (II) and taking $\sigma = 0{\cdot}3$, we find :

$$dx = -0{\cdot}1(dh - dl) \quad . \quad . \quad . \quad . \quad . \quad (9.2)$$

$$da = -0{\cdot}9dh - 0{\cdot}1dl \quad . \quad . \quad . \quad . \quad . \quad (9.3)$$

$$dL' = -0{\cdot}6(dh - dl) \quad . \quad . \quad . \quad . \quad . \quad (9.4)$$

$$dD = -0{\cdot}1(dh - dl) \quad . \quad . \quad . \quad . \quad . \quad (9.5)$$

The choice of σ is based upon the assumption that additional income is heavily taxed and government expenditure only partially reacts on an increase in tax receipts. Taking $\sigma = 0{\cdot}2$ or $0{\cdot}4$ does not essentially change our results.

Comparing these results with those obtained for Model II and assuming, as a start, that wage-rates do not change ($dl = 0$),

[1] Cf. *e.g.*, G. Stuvel, *The Exchange Stability Problem*, Leiden, 1950, where all previous authors are also cited.

[2] Cf. note 1 on p. 73.

we see that again the influence of h on a and L' is negative. The balance-of-payments deficit appears to react in the "classical" way: decreasing with an increase in productivity.

In addition, we now find that even the influence on x is slightly negative. This is evidently due to the tendency, now assumed, to hoard part of an additional income Z'. Given the fact that workers' income declines and non-workers hoard part of the increase, the possibility arises of a decrease in total expenditure; and with the numerical values of our coefficients this appears actually to happen.

In this case the negative effect on total real expenditure, explained by the tendency to hoard, is the more remarkable, as the influence of h on the volume of production y is easily found to be positive; since $dy = da + dh$, we have

$$dy = 0{\cdot}1(dh - dl) \quad . \quad . \quad . \quad (9.6)$$

Here we have a clear example of the adverse influence of the terms of trade: the increase in h causes prices to go down, and this fall explains the divergency between dy and dx.

Our conclusion must be that an increase in labour productivity in this model turns out to be detrimental to welfare, although the effect on the balance of payments appears to be slightly favourable.

10. *Wages fully responding to productivity increases* (Model IV). The first alternative on Model III we shall deal with assumes that wages are not kept constant, but move along with the change in productivity; hence $dl = dh$. This behaviour of wages may be interpreted as the realisation of "social equilibrium," if by that phrase we mean the maintenance of the distribution of national income between labour and non-labour income. In fact, it may be easily seen that only by this wage policy will distribution remain unaltered. This assumption leads us to the remarkable result that:

$$dx = dy = dL' = dD = 0 \quad . \quad . \quad . \quad (10.1)$$

and

$$da = -dh \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (10.2)$$

This result may also be obtained in a verbal and more general way.[1] The only assumptions to be made are:

(a) The price level depends on wage-rates and productivity only as far as the ratio between these two variables changes; in addition, it depends on the volume of production.

[1] Cf. J. Tinbergen, "The Significance of Wage Policy for Employment," *International Economic Papers* (I), 1951.

(*b*) The volume and the value of exports depend on wage-rates and productivity only through their dependence of prices.

(*c*) With constant foreign prices, the volume and value of imports depend only on the volume of production and the price level of national products.

(*d*) National income is a function of national expenditure, exports and imports.

(*e*) National expenditure is a function of national income, labour income and the price level.

(*f*) Labour income is the product of the volume of production and labour costs per unit of product (which equal the ratio between the wage-rate and productivity).

From these assumptions, which together with some definitions represent a sufficient number of relations to determine, among other things, the volume of production y, total real expenditure x, real labour income L' and the balance-of-payments deficit D as functions of productivity and the wage-rate, it will be found that y, x, L' and D depend only on the ratio of l and h and, besides that, in no other way on l and h. Any changes in l and h that do not affect their ratio will not change, therefore, y, x, L' and D, as indicated by (10.1). Since, in addition, $a = \frac{y}{h}$, $da = -dh$ as long as $dl = dh$.

The result for our topic is that with this wage policy an increase in productivity will not affect x, L' or D and adversely affect employment. The result might be interpreted by stating that national welfare of an open economy cannot increase if exports do not increase and that the assumed wage policy prevents this possible effect of an increase in productivity from materialising.

11. *Tax policy in order to maintain balance-of-payments equilibrium* (Model V). Introducing now, as an additional instrument of economic policy, a possible increase in indirect taxes and assuming this instrument to be used in order to maintain balance-of-payments equilibrium, we obtain relations [1] in which the change in the rate τ of indirect taxes appears as an additional variable :

$$dx = -0{\cdot}1(dh - dl) - 2{\cdot}0d\tau \quad . \quad . \quad . \quad . \quad (11.1)$$

$$da = -0{\cdot}9dh - 0{\cdot}1dl - 1{\cdot}3d\tau \quad . \quad . \quad . \quad (11.2)$$

$$dL' = -0{\cdot}6(dh - dl) - 2{\cdot}1d\tau \quad . \quad . \quad . \quad . \quad (11.3)$$

$$dD = -0{\cdot}1(dh - dl) - 0{\cdot}7d\tau \quad . \quad . \quad . \quad . \quad (11.4)$$

[1] *Loc. cit.*

The first two terms at the right-hand side are the same as in equations (9.2) to (9.5).

Assuming that again wage-rates will not be changed, but that tax rates will be altered in such a way as to maintain balance-of-payments equilibrium, we have to find $d\tau$ from the relation

$$0 = dD = -0{\cdot}1dh - 0{\cdot}7d\tau$$

or
$$d\tau = -0{\cdot}15dh \quad . \quad . \quad . \quad . \quad . \quad (11.5)$$

leading to :
$$dx = 0{\cdot}2dh \quad . \quad . \quad . \quad . \quad . \quad (11.6)$$
$$da = -0{\cdot}7dh \quad . \quad . \quad . \quad . \quad . \quad (11.7)$$
$$dL' = -0{\cdot}3dh \quad . \quad . \quad . \quad . \quad . \quad (11.8)$$

This change in policy appears to bring about a positive influence of labour productivity on real expenditure, leaving us still, however, with a negative influence on employment and real workers' income.

12. *Tax policy in order to maintain employment* (Model VI). Let us now suppose that tax policy is not used in order to maintain balance-of-payments equilibrium but in order to maintain employment. This comes to choosing, in formulæ (11.1) to (11.4), τ so as to make $da = 0$ (taking still $dl = 0$). The results are :

$$d\tau = -0{\cdot}7dh \quad . \quad . \quad . \quad . \quad . \quad (12.1)$$

and
$$dx = 1{\cdot}3dh \quad . \quad . \quad . \quad . \quad . \quad (12.2)$$
$$dL' = 0{\cdot}7dh \quad . \quad . \quad . \quad . \quad . \quad (12.3)$$
$$dD = 0{\cdot}4dh \quad . \quad . \quad . \quad . \quad . \quad (12.4)$$

" Welfare " in our sense will now be favourably influenced to a slight degree but at the expense of a considerable increase in the balance-of-payments deficit. Similar results would have been obtained if we had taken $dl = dh$.

13. *Price policy in order to maintain employment* (Model VII). Similar calculations were made with still another additional instrument, viz., by introducing price policy (profit-margin regulations) as a means of maintaining employment. With this instrument as an additional variable π_0, the formulæ (9.2) to (9.5) become :

$$dx = -0{\cdot}1(dh - dl) - 0{\cdot}9\,d\pi_0 \quad . \quad . \quad . \quad (13.1)$$
$$da = -0{\cdot}9dh - 0{\cdot}1dl - 1{\cdot}1d\pi_0 \quad . \quad . \quad . \quad (13.2)$$
$$dL' = -0{\cdot}6(dh - dl) - 2{\cdot}0d\pi_0 \quad . \quad . \quad . \quad (13.3)$$
$$dD = -0{\cdot}1(dh - dl) - 0{\cdot}0d\pi_0 \quad . \quad . \quad . \quad (13.4)$$

Choosing $d\pi_0$ so as to make da vanish we get :

$$d\pi_0 = -0{\cdot}8dh \quad . \quad . \quad . \quad . \quad . \quad (13.5)$$

leading to :

$$dx = +0{\cdot}6dh \quad . \quad . \quad . \quad . \quad . \quad (13.6)$$

$$dL' = +dh \quad . \quad . \quad . \quad . \quad . \quad (13.7)$$

$$dD = -0{\cdot}1dh \quad . \quad . \quad . \quad . \quad . \quad (13.8)$$

This version appears to be favourable to welfare in the various aspects used so far and to the balance of payments. But here, as could be expected, it is non-workers that have to bear the burden, and again the effect is questionable.

14. *Two-industry version of short-term model* (Model VIII). The models so far analysed have shown us that the influence of productivity on economic welfare and the balance of payments is by no means as unambiguous as is often believed. It very much depends on a number of circumstances whether an increase in productivity has or has not a favourable effect—however the term favourable be interpreted. This conclusion is of some importance, as has been pointed out already in section 1, for present-day economic policy in a number of countries, since there is a strong tendency to advocate increases in productivity in a general way. It would appear that at least certain qualifications might be useful and that, perhaps, a policy of furthering productivity deserves to be directed towards specific industries in order to have a maximum of success. Some of the adverse reactions so far detected probably work out in a more pronounced way in one and in a less pronounced way in another type of industry; this applies, *e.g.*, to the capital-shortage argument, whereas, on the other hand, the significance for foreign trade also varies considerably between one industry and the other.

For these reasons the macro-economic approach of the preceding sections cannot be the only basis of devices for practical policy. Divergencies between industries are ruled out beforehand in these models. They may have made us cautious *vis-à-vis* too simple ideas about the desirability of a general increase in productivity in one country, but they cannot show us the way towards alternative policies. Micro-economic models will be necessary; but we know by now that their handling is no simple affair. There seems to be some wisdom in a modest start, and this is why I propose only to contrast the previous models to the simplest conceivable alternative in this connection : a two industry model, leaving it to others more courageous than I to expand the number of industries.

In order to find out in exactly what way the two-industry version leads to results different from a one-industry version we will discuss one and the same problem in both ways; in order to reduce the problem to its simplest kernel we will even simplify the one-industry model still further. The problem to solve will be the following: suppose we want (i) to maintain employment, (ii) to maintain social equilibrium as defined in section 10 and (iii) to restore equilibrium in the balance of payments, how have we to vary labour productivity?

The reader will observe that by posing this problem I have shifted from a problem of explanation to a problem of policy, or, as we now say, to a "decision model" (Frisch). This will probably accentuate some of our findings so far in a useful way.

We will use Model II of section 7 with the exception of the hypothesis of monetary equilibrium, meaning that we assume a more general spending reaction. Moreover, we will simplify our supply equation by taking $\pi_2 = 0$ (which does not influence our results very much). Since the balance-of-payments deficit D = value of imports − value of exports, we find from (7.3) and (7.9):

$$dD = \mu dy + \mu(\epsilon + \eta - 1)dp \quad . \quad (14.1)$$

and from (7.4) and (7.10):

$$dp = \pi_1(dl - dh) \quad . \quad . \quad . \quad . \quad (14.2)$$

ruling out the possibility of changes in π_0.

For our problem it is useful to replace dy by $da + dh$ (cf. 7.12) in equation (14.1). The condition of social equilibrium may be written as $\frac{dp}{p - \pi_3} = \frac{dl - dh}{l/h}$ or

$$dp = \lambda(dl - dh) \quad . \quad . \quad . \quad . \quad (14.3)$$

where λ is the initial value of $\frac{p - \pi_3}{l/h} = 0{\cdot}7$.

Equations (14.1) to (14.3) are then three equations enabling us to find the three political instruments dl, dh and dp when the three targets da, λ and dD are given. The solution is easy: we find $dp = 0$, $dl = dh$ and $\mu dh = dD$. The latter result tells us that in order to reduce D we have to reduce h, and therefore represents some of the paradoxical conclusions reached so far.

15. This set-up we will now refine by considering two industries instead of one. By so doing we shall meet some of the more general difficulties of "micronising" macro-models; but we shall not go into this side more systematically.

We have now to deal with two branches, each of them characterised by their own a, y, x, e, h, p, μ and π, which we shall distinguish by super-scripts 1 and 2. Of these, the hs and the ps will remain index-numbers with an initial value of 1, but the as, ys, xs and es are supposed to add up to the corresponding macro concepts. We shall assume wage-rates and export elasticities to be the same in the two industries and therefore maintain our symbols l and ϵ. As targets we consider :

(i) to maintain employment a^1 and a^2 in the two industries, *i.e.*, $da^1 = da^2 = 0$;

(ii) to maintain social equilibrium, *i.e.*, $dp = \lambda(dl - dh)$, where h and p now represent weighted averages of h^1, h^2 and p^1, p^2, to be defined later; and

(iii) to restore equilibrium in the balance of payments, *i.e.*, to give a certain negative value to dD.

Our unknowns are p^1, p^2, l, h^1 and h^2.

Our equations will be the analogues to (14.1) to (14.3); but we want more equations, since we have more unknowns. On the other hand, the existence of more than one industry also implies the existence of more relations.

The following equations are easily found :

$$dD = \mu^1 dy^1 + \mu^2 dy^2 - de^1 - e^1 dp^1 - de^2 - e^2 dp^2 \quad . \quad . \quad (15.1)$$

$$dp = \frac{v^1 dp^1 + v^2 dp^2}{v^1 + v^2} = \frac{v^1 \pi_1{}^1 (dl - dh^1) + v^2 \pi_1{}^2 (dl - dh)}{v^1 + v^2} \quad (15.2)$$

$$dp^1 = \pi_1{}^1 (dl - dh^1) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.3)$$

$$dp^2 = \pi_1{}^2 (dl - dh^2) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.4)$$

$$de^1 = -e^1 \epsilon dp^1 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.5)$$

$$de^2 = -e^2 \epsilon dp^2 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.6)$$

$$\frac{dy^1}{y^1} = \frac{da^1}{a^1} + \frac{dh^1}{h^1} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.7)$$

$$\frac{dy^2}{y^2} = \frac{da^2}{a^2} + \frac{dh^2}{h^2} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.8)$$

In these equations v^1 and v^2, used as weights for p^1 and p^2, are the volumes of gross production, as distinguished from the volumes of net production y^1 and y^2; for an industry with a higher import quota v^2 is relatively larger than y^2; but we assume that v^1 varies proportionally to y^1 and v^2 to y^2. Further $h^1 = h^2 = 1$ and $da^1 = da^2 = 0$.

The above eight equations are not sufficient in number to yield us all the nine unknowns dy^1, dy^2, de^1, de^2, dp^1, dp^2, dh^1,

dh^2 and dl. It is necessary now to give some attention to the variables dx^1 and dx^2; and their role is understood most easily if we also consider dv^1 and dv^2. Hence, four new unknowns and five more equations are introduced. Four of them give no trouble:

$$dv^1 = dx^1 + de^1 \quad . \quad . \quad . \quad . \quad . \quad (15.9)$$

$$dy^2 = dx^2 + de^2 \quad . \quad . \quad . \quad . \quad . \quad (15.10)$$

$$\frac{dy^1}{v^1} = \frac{dy^1}{y^1} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.11)$$

$$\frac{dy^2}{v^2} = \frac{dy^2}{y^2} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.12)$$

The fifth has to tell something about the relation between dx^1 and dx^2. This was not necessary in our one-industry model, since total real expenditure dx depends on dy through the spending relation which is no longer free once we make a certain assumption on the balance of payments: the deficit on that balance is identical with the monetary deficit in internal spending. In the two-industry model, however, the distribution of dx over dx^1 and dx^2 also comes in, and that is not implied in any of the other relations. This distribution will, generally speaking, depend on the relative prices of goods 1 and 2. Only as a limiting case may we assume, which we will do for simplicity, that it is independent of prices. Next, the distribution will depend on the size of x^1 and x^2; there will be a tendency for dx^1 and dx^2 to be proportional to x^1 and x^2. But a third tendency is present, determined by income elasticities of x^1 and x^2; the higher the elasticity of x^1, the higher dx^1. Putting

$$\frac{dx^1}{x^1} = \rho \frac{dx^2}{x^2} \quad . \quad . \quad . \quad . \quad . \quad . \quad (15.13)$$

ρ represents the ratios of the income elasticities for x^1 and x^2.

16. We are now able to solve our equations. Leaving the algebra to the reader and using the relations $(1 + \mu^1)y^1 = v^1 = x^1 + e^1$ and $(1 + \mu^2)y^2 = v^2 = x^2 + e^2$, we may first reduce our system to three equations in dl, dh^1 and dh^2:

$$x^2\{(x^1 + e^1)dh^1 + e^1\epsilon\pi_1{}^1(dl - dh^1)\} = \rho x^1\{(x^2 + e^2)dh^2 + e^2\epsilon\pi_1{}^2(dl - dh^2)\} \quad . \quad . \quad (16.1)$$

$$(x^1 + e^1)\pi_1{}^1(dl - dh^1) + (x^2 + e^2)\pi_1{}^2(dl - dh^2) = 0 \, . \quad (16.2)$$

$$\frac{\mu^1}{1 + \mu^1}(x^1 + e^1)dh^1 + \frac{\mu^2}{1 + \mu^2}(x^2 + e^2)dh^2 + (\epsilon - 1)\{e^1\pi_1{}^1(dl - dh^1) + e^2\pi_1{}^2(dl - dh^2)\} = dD \quad . \quad . \quad (16.3)$$

Equation (16.2) enables us to express dl in terms of dh^1 and dh^2:

$$(b^1 + b^2)\,dl = b^1 dh^1 + b^2 dh^2 \quad . \quad . \quad . \quad (16.4)$$

where

$$b^1 = \pi_1{}^1(x^1 + e^1) \text{ and } b^2 = \pi_1{}^2(x^2 + e^2) \quad . \quad (16.5)$$

representing total wages in the initial situation in branches 1 and 2, respectively. Substituting (16.4) into (16.1), we find dh^1/dh^2:

$$\frac{dh^1}{dh^2} = \frac{\rho(x^2 + e^2)x^1 - E\{x^2e^1(x^2 + e^2) + \rho x^1e^2(x^1 + e^1)\}}{(x^1 + e^1)x^2 - E\{x^2e^1(x^2 + e^2) + \rho x^1x^2(x^1 + e^1)\}} \quad . \quad (16.6)$$

where $E = \dfrac{\epsilon\pi_1{}^1\pi_1{}^2}{b^1 + b^2}$.

Finally, we may find, *e.g.*, dh^1 from a substitution of (16.6) into (16.3).

It would lead us too far to discuss all the implications of the solutions. We want to stress, however, the following points:

A. The example clearly shows how rapidly matters become more complicated with an increase in the number of branches.

B. It may be shown that not only different values for dh^1 and dh^2 will be found, but that even different signs of dh^1 and dh^2 are possible. According to formula (16.6), this depends on the values of x^1, x^2, e^1, e^2, ρ and E, *i.e.*, on the sales composition of each of the industries, on the ratio of their income elasticities ρ, on the price elasticity ϵ (taken equal for both industries) and the product of their labour quota $\pi_1{}^1$ and $\pi_1{}^2$. Taking, to begin with, $\rho = 1$, $\epsilon = 2$, $b^1 + b^2 = 0{\cdot}5$ and $\pi_1{}^1\pi_1{}^2 = 0{\cdot}09$, we find for dh^1/dh^2:

TABLE II

Two-industry Model. Values for $\mathrm{dh^1/dh^2}$ *with* $\rho = 1$, $\epsilon = 2$, $\mathrm{b^1 + b^2 = 0{\cdot}5}$ *and* $\pi^1{}_1\pi^2{}_1 = 0{\cdot}09$

x^1. \ e^1.	0.	0·1.	0·2.	0·3.	0·4.
0	indet.	−0·9	−0·8	−0·7	−0·6
0·1	1·5	0·6	0·2	−0·0	−0·1
0·2	1·5	0·9	0·5	0·3	0·2
0·3	1·6	1·1	0·7	0·5	0·3
0·4	1·7	1·2	0·9	0·6	0·4
0·5	1·9	1·4	1·0	0·7	0·5

Evidently the negative sign for dh^1/dh^2 occurs here only if x^1 is very small, *i.e.*, if industry 1 is mainly an export industry. It is clear that in that case indeed an increase in productivity will yield a positive contribution to the balance of payments.

From the structure of the formula for dh^1/dh^2 it is also clear that with higher values for E, *i.e.*, for higher export elasticities as well as for higher labour quota, negative values for dh^1/dh^2 will occur more frequently. The same is true for lower values of ρ, *i.e.*, if industry 1 shows a relatively lower income elasticity of home demand than industry 2.

C. On the other hand, it is remarkable that μ^1 and μ^2, the import quota, do not directly influence the value of dh^1/dh^2; they do not occur in formula (16.6). This statement should, however, be supplemented by the consideration that μ^1 and μ^2 are not completely free, once that the x and the e are given. Since, in our system of units, $y = 1$ or $y^1 + y^2 = 0$, we have :

$$\frac{x^1 + e^1}{1 + \mu^1} + \frac{x^2 + e^2}{1 + \mu^2} = 1 \quad . \quad . \quad . \quad (16.7)$$

meaning that μ^1 and μ^2 are situated on an equilateral hyperbola. As a consequence of boundary conditions for the x and e (all of them should be positive), not all values of μ^1 and μ^2 are permitted.

D. The condition for dh^1 to be equal to dh^2 is also easily found; it is

$$\rho(x^2 + e^2)x^1 = (x^1 + e^1)x^2 \quad . \quad . \quad . \quad (16.8)$$

In this case there is no need for a micro-model.

17. *Summary.* Let us try to summarise our findings. The old thesis that an increase in productivity leads to an increase in welfare should not be misunderstood. Not under all circumstances does it lead to consequences that are in all respects attractive. In a number of cases the consequences are definitely mixed; some of them favourable, others unfavourable. It does not always entail an increase in total real expenditure; nor does it always yield an increase in real workers' income. Often it reduces the volume of employment. If it acts favourably on all these aspects of welfare it may deteriorate the balance of payments or real non-workers' income.

Of course, some of these statements have an element of self-evidence. If we find, in Model III, that x, a and L' all diminish but the balance of payments improves, one may object that this balance-of-payments surplus should somehow be added to the results. This is, to some extent, correct. But on the other hand, the tendency to hoarding which is the reason for the balance-of-payments surplus does cause total real expenditure, and hence presumably consumption, to go down, be it only temporarily.

Another objection may be that a decline in employment is in fact an element of welfare, since it represents leisure, and that an increase in leisure is one of the natural ways of enjoying the advantages of increased productivity. This is also in some sense true; here the difficulty is that in present-day society the decline in employment is often borne by a small group of unemployed and if so is certainly an evil. A final remark may be that we studied only isolated increases in productivity in one country and that some of the adverse effects may vanish if all countries show an increase in productivity at the same time. This again does not help countries now summoned to raise productivity more than others.

In fact it may be said that an increase in productivity in one country (without an increase in the other countries)—just as an increase in productivity in one firm—to a large extent comes to the advantage of the buyers, *i.e.* the other countries.

As I said already, the interpretation of this study should nevertheless not be that increases in productivity are of no use. They decidedly are, but they should at the same time be well-selected and well-directed increases in productivity.

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JOHN BARTON (1789–1852)

I

COMPARED to the cruelty which many a great scholar has suffered at the hands of his contemporaries, the little interest the public has shown in John Barton's exquisite essays in economic theory amounts but to a minor injustice. It is true that Barton was "damned with faint praise by McCulloch, dismissed by Tedder in the *Dictionary of Political Economy* as 'the author of several clever but somewhat unsound pamphlets,' and omitted altogether from the *Dictionary of National Biography*." [1] It is also true that the otherwise good article on him in the *Encyclopædia of the Social Sciences* mentions only one of his essays, gives only two bibliographical references and states that the dates of his birth and death are unknown. One might add that even to-day, a hundred years after his death, no library seems to possess a full collection of his writings, or even a full list of them. Fortunately, during his lifetime John Barton did not have to depend much on public opinion. His estate in Sussex, England, made him an independent country gentleman. He was as interested in botany as he was in the social sciences, and he was free to divide his time between the two as he pleased. He liked to read, and could afford it. He travelled. He seems to have had a pleasant childhood, and he entertained cordial relations with his brother and sisters throughout his life. Last, not least, he was treated with respect by his illustrious contemporaries.[2]

The real losers from the fact that John Barton's writings have remained for a whole century half-covered by the dust of oblivion are undoubtedly those economists and sociologists who have had to re-discover in the meantime, at the cost of an unnecessary supplementary effort, those flaws in the Ricardian and Malthusian doctrines which make these doctrines inapplicable to the most vital problems of economic policy and which form, even to-day, an obstacle to the understanding of many basic issues in the fields of economics, demography and politics.

[1] Hollander, J. H., Introduction to the reprint of Barton's *Observations, etc.* (Baltimore, 1934).

[2] Edward Fitzgerald wrote to Bernard Barton: "I should much like to see your Platonic Brother; . . . I hope to meet your Brother one of these days, and to learn much from him." (E. V. Lucas, *Bernard Barton and his Friends*, 1893.)

II

John Barton was born on June 11, 1789, in Southwark, London, of Quaker parents. His father had died about two months earlier, and John was brought up in Tottenham, in the villa of his maternal grandfather. In 1811 he married a Quaker girl, Ann Woodrouffe Smith, and is described on this occasion in the marriage register as a merchant of Chichester, Sussex. After the death of Ann Woodrouffe Barton, John married Frances Rickman, of Lewes, by whom he had six children.

That John Barton was a man of independent character may be seen from the fact that on September 2, 1827, he resigned his membership in the Society of Friends, stating among other things that he did not consider it right to refuse to pay tithes or to omit participating in the sacraments. His sister Maria wrote that he had " a cold manner at times, but he has a very kind heart," and his brother Bernard speaks of John's " mathematically demonstrative turn of mind." Referring to an exchange of views which the two brothers had on the occasion of the " Beacon-controversy " in the Society of Friends, Bernard noted that " John has much too enlarged a mind to love sectarians in any form." [1]

There is very little precise information on the life and activities of John Barton himself. He certainly received a good education; he knew French and German very well, and apparently Latin. He was conversant with Bacon, Bentham, Hobbes, Hume, Locke, Milton and a great many other modern and ancient authors on philosophical and other subjects. He visited the South of France and most of Italy, and there are indications that he may have travelled also in Germany, Poland and Russia. In 1820 he stated that he had been acting trustee of a savings bank for seven years. It is known that he corresponded at one time with David Ricardo,[2] was known to Charles Lamb [3] and met Edward Fitzgerald.[4] All other information on his activities that could be found is

[1] Unpublished letter to Thomas Gates Darton, son-in-law of Maria Barton Hack, dated October 2, 1837 (in the possession of Mr. Lawrence Darton).

[2] Cf. p. 94.

[3] On February 10, 1825, Lamb wrote to Bernard Barton : " Your gentleman brother sets my mouth a-watering after liberty. Oh, that I were kicked out of Leadenhall with every mark of indignity, and a competence in my fob. The birds in the air would not be so free as I should. How I would prance and curvet it, and pick up cowslips, and ramble about purposeless as an idiot."

[4] This can be inferred from the text of a letter of introduction which Fitzgerald wrote to John Barton on September 17, 1844, on behalf of his friend John Allen, later Archdeacon of Salop. (*Some New Letters of Edward Fitzgerald*, edited by F. R. Barton, London 1923.)

contained in the unsigned obituary notice which upon his death appeared in the *Gentleman's Magazine*. The notice reads :

> " (Died on) March 10, 1852 : At Chichester, aged 62 John Barton esq., one of the original promoters of the Chichester Savings Bank, the Lankastarian School, the Mechanic's Institution of which he was treasurer until its union with the Philosophical Society. For many years he lectured within its walls in an able and popular manner." [1]

It seems, from his *Lecture on the Geography of Plants*, that John Barton visited Italy prior to 1827. References to other places which he may have visited are found in two pieces, published in 1833 and 1837, but several events warrant the belief that these travels too took place prior to 1827.

III

Had he bothered to write a systematic economic treatise, John Barton would probably have been recognised as a scholar of outstanding merit. One of the circumstances which made it easy for posterity to overlook the great scientific value of his writings was certainly that instead of producing another heavy volume on the " principles of political economy," like many of his contemporaries, he wrote individual essays dealing with specific problems as they presented themselves to his attention.

Several other circumstances also stood in the way of Barton's writings immediately attracting the attention which they deserve. In the first place he was considerably younger than people like Ricardo, Malthus, Mill, Tooke and Torrens. This could not have put him, from the outset, on an equal footing with the celebrities of his time ; the more so as by character and upbringing he seems to have been a rather modest man. Moreover, he lived at Chichester, later at Stoughton and East Leigh (Emsworth), that is to say away from London. He thus lacked the opportunity of frequent contacts with other social scientists. Probably he never attended a meeting of the " Political Economy Club," the members of which used to get together in Ricardo's house. Finally, if the hypothesis that he travelled abroad after 1822 is correct, this would mean that he was out of touch with Ricardo's friends and followers precisely during the years when some big tournaments were being fought in the field of economic theory.[2]

[1] *Op. cit.*, 1852, vol. 37, p. 431.

[2] On the controversy which opposed Ricardo and his followers, on the one hand, to Sismondi, on the other hand, see G. Sotiroff, *Ricardo und Sismondi, eine aktuelle Auseinandersetzung über Nachkriegswirtschaft vor 120 Jahren*, Zürich, 1945.

Yet the economic writings of John Barton add up to some 400 pages covering a variety of extremely important subjects, and are always read with profit and enjoyment. The smallest tribute that can be paid to the author's memory in this hundredth year of his death is, perhaps, to call attention to some particularly illuminating parts of his essays, and to note some of the circumstances under which they were written.

As the titles of the essays are somewhat lengthy,[1] they will be referred to below under the following abbreviations: (1) *Observations*, (2) *Inquiry*, (3) *Excess of Population*, (4) *Corn Laws*, (5) *Rate of Mortality* and (6) *Monetary Crisis of 1847*. As already stated, the *Observations* were reprinted in 1934. None of the others has ever been reprinted; nor have they been quoted or mentioned by other authors more than a dozen times.

IV

John Barton was prompted to write his *Observations* by a perusal of the report of the Committee appointed by the House of Commons to consider the Poor Laws. Following a principle set up by Adam Smith, the Committee expressed the opinion that the number of persons employed "must depend absolutely upon the amount of the funds which alone are applicable to the maintenance of labour,"[2] and that "whoever . . . is maintained by the law as a labouring pauper, is maintained only instead of some other individual, who would otherwise have earned by his own industry the money bestowed on the pauper."[3] Only the increase of the wealth, or capital, by which labor is supported, the Committee thought, can increase the demand for labor and thus raise wages; when this happens laborers are enabled to provide better for their children, and a larger proportion of those born are reared. In this way population, and the supply of labor, are increased.

This reasoning, John Barton observed, is not confirmed by the testimony of experience. Noting that the progress of population by no means corresponds to the accumulation of wealth, he produced evidence from various periods of British history to prove his point. He estimated that "the progress of population of late years has been ten times more rapid than a century ago. Yet it is impossible to believe, that the accumulation of capital has been ten times greater."[4] Whereupon he proceeded to prove by deductive reasoning the fallacy of the doctrine that the progress

[1] A full list of John Barton's writings is given in the Appendix.
[2] *Observations*, p. 5. [3] *Ibid.* [4] *Ibid.*, p. 14.

of population is measured by the increase of wealth (capital). He pointed out that the demand for labor depends on the increase of circulating, and not of fixed capital (*i.e.*, machinery)—a principle the importance of which cannot be over-emphasised.

> "It is easy to conceive" [John Barton wrote] "that under certain circumstances, the whole of the annual savings of an industrious people might be added to fixed capital, in which case they would have no effect in increasing the demand for labour." [1]

According to John Barton, population growth did not result from rising wages, but from a decrease of mortality, which took place "even in those districts where the real wages of labour have been as uniformly falling." [2] This was an important distinction, for mortality, he found, was more likely to fall when wages fell, rather than otherwise. This paradox resulted from the fact that whenever wages rose, manufacturers and farmers tended to substitute machinery or horses for manual labor, so that a considerable proportion of the existing laborers were thrown out of work. Conversely, whenever wages fell, more laborers were hired. Since, however, the difficulty of finding employment discourages marriage much more than the insufficiency of the rate of wages, low wages, by increasing employment, tend to encourage marriages. For the same reason, low wages tend to reduce the rate of mortality.[3]

On the basis of this theory John Barton was able to formulate a satisfactory explanation of the remarkable growth of population which, starting in the eighteenth century, has been going on ever since. Abundant imports of precious metals from the American mines, he stated, raised the prices of manufactured commodities, increased the gains of employers and induced them to hire as many hands as possible, and "this is precisely the state of things most favourable to the increase of people." [4] Indeed, the proportion of deaths to population, which was 1 in 40·6 for the period 1780–84, had fallen to 1 in 53·3 for the period 1805–9, which proves, Barton said, "with the force of absolute demonstration, that vice or misery, or both, have decreased one-fourth within the last forty years." [5] During the same period, the absolute number of marriages went up, but not their relative number. The proportion was 1 in 120, for the period 1870–84, and 1 in 123 for the period 1805–9. This, John Barton observed, shows the error of those who attribute to the Poor Laws the effect of encouraging

[1] *Observations*, p. 17. [2] *Ibid.*, p. 22.
[3] *Ibid.*, p. 27. [4] *Ibid.*, p. 30. [5] *Ibid.*, p. 59.

marriage. These laws no more encourage marriage than they lower wages. Without them, the distress of the poor would have been greater, in view of the remarkable reduction which the demand for labor had experienced (1817). Yet, "if it should be found that the present want of demand arises from permanent, and not from temporary causes . . . a different set of measures would require to be adopted.—Some channel must be found for drawing off the excess of population, without resorting to the cruel alternative of suffering it to be reduced by actual want." [1] In this connection, John Barton approved the Committee's recommendation that every facility should be given to such laborers as may be desirous of emigrating to the colonies.

The *Observations*, however, did not have a great success. Like many intelligent and honest authors, John Barton was inclined to attribute this to his own fault. He accordingly decided to present the subject anew in a more popular form. Such was the origin of his second essay, the *Inquiry*.

"In some *Observations on the Circumstances which influence the Condition of the Labouring Classes of Society*," he wrote in the preface to his second essay, "the Author attempted, nearly three years ago, to point out some important errors in the received opinions on those branches of Political Economy which relate to the condition of the Poor. The view taken there of the subject was chiefly theoretical. In the following pages, the same principles, with some slight variations, suggested by further inquiry and reflection, are presented in a more familiar form and with more immediate reference to practical purposes." [2]

Declining to discuss the latest crisis, but fixing his attention on the general trend of agricultural wages, John Barton showed again that: (*a*) the fall in wages was not due to the operation of the Poor Laws, as argued by Malthus; (*b*) the sufferings of the poor did not keep pace with the depreciation of labor, as proved by the fall of mortality; (*c*) the fall of mortality caused a rapid population increase; (*d*) a factor much more powerful than population growth, which pushed agricultural wages down, was the increased demand for manufactured articles, springing from the abundant supply of precious metals brought to European markets from the New World. This demand, by raising the profits of manufacturing enterprises, drained capital away from agriculture into manufacturing. A relative scarcity of capital appeared in agricultural districts, the demand for agricultural

[1] *Observations*, pp. 70–1.

[2] The preface is dated Chichester, March 27, 1820.

labor fell off and wages declined. John Barton, however, agreed that the rapid population growth made the position of agricultural laborers worse. Therefore, he was prepared to consider measures apt to slow down this growth. He figured out that, inasmuch as the average number of years between births was two, and the average number of births per married couple four, if a sufficient number of young men and women could be induced to defer their marriages by two years, this would result in a reduction of the population increase by one-fourth. He, therefore, agreed with those who favored a compensation being offered, in cash or in kind, to persons willing to follow this policy, and he recommended a plan to this effect.

While this second essay was being written, something happened that brought Bartons *Observations* to the attention of David Ricardo, who, on second reading, was greatly impressed by it. The facts are the following :

For several years Malthus had been working on his *Principles of Political Economy*, apparently without being sure whether, or when, he was going to finish it. The volume was supposed to have been ready as early as December 1817. " Malthus has a volume ready which I am also anxious to see. . . ," wrote Ricardo to Trower on December 10, 1817.[1] And six days later to Malthus himself : " I am glad to find that we may soon expect another volume from your pen, although if you attack me, I am prepared for nine-tenths of our readers deciding in favour of your view of the question." [2] And again, in a letter to Trower, dated January 26, 1818 : " My discussions with Malthus have been innumerable. . . . The new publication of Malthus, which I mentioned to you is not yet in the press. . . ." [3] It was not until the summer of 1819 that Malthus began to make real progress. On September 21, 1819, Ricardo wrote to Malthus : " I am glad that you are proceeding merrily with your work. I now have hopes it will be finished. You have been very indolent, and are not half so industrious nor so anxious as I am when I have anything on hand." [4] The book was actually completed and left the press in April 1820, *i.e.*, simultaneously with Barton's *Inquiry*.

What had happened to speed up Malthus's work? It happened that in the spring of 1819 there appeared Sismondi's *Nouveaux principes d'économie politique*. By a striking co-

[1] *Letters to Hutches Trower and Others*, ed. by J. H. Hollander and J. Bonar, Oxford, 1899, p. 44.
[2] *Letters to Malthus*, ed. by James Bonar, Oxford, 1887, p. 145.
[3] *Letters to Trower*, p. 46. [4] *Letters to Malthus*, p. 158.

incidence, all important ideas of Sismondi reappear, sometimes in a slightly different garb, in Malthus's *Principles*. But Sismondi and Barton, while working in complete independence and ignorance of each other, were thinking very much along the same lines. Somehow, Malthus was led to insert in his book a few references to these two writers, not without finding reason to disagree with Barton, incidentally. Ricardo, who read Malthus's work as soon as it was out, was thus induced to turn again to Barton's first essay.

This time Barton's argument appeared to him much more convincing than three years earlier. He, thereupon, did not only admit that Barton's essay " contains much valuable information," but radically changed his own views on the effects of machinery upon the demand for labor. As it is well known, this resulted in the addition of a new chapter " On Machinery " to the third edition of his *Principles* (1821). In this chapter Ricardo recognised that John Barton had " taken a correct view of some of the effects of an increasing amount of fixed capital on the condition of the labouring classes," and quoted the relevant portion of Barton's *Observations*.

In this connection it is interesting to note that soon after the publication of the first edition of Ricardo's *Principles*, John Barton, in a letter to Ricardo, had expressed his views on profits and fixed capital. This letter has been lost, but Ricardo's reply, dated May 20, 1817, has been preserved and was published as an appendix to the reprint of John Barton's *Observations* (1934). Somewhat laboriously, Ricardo tries to refute Barton's statement that the formation of fixed capital lessens the demand for labor, and refers his correspondent to his *Principles*. The subsequent conversion of Ricardo, therefore, must have come as a pleasant surprise to John Barton.

> " I endeavoured to prove " [wrote he later] " that an increase of Capital, so far as it is expended in the construction of machinery, has no tendency to increase the demand for labour; and may even, in certain circumstances, tend to lessen that demand. The late Mr. Ricardo thought me wrong, and endeavoured to convince me so; but he subsequently assented in great measure to my view of the subject, and recorded his change of opinion in the last edition of his *Principles of Political Economy*." [1]

Regardless of the credit given him by Ricardo, John Barton did not achieve great success with his second essay either; at least in England, where he was attacked by McCulloch. But

[1] *Corn Laws*, p. 67.

on the continent of Europe, Sismondi was much impressed by both the *Observations* and the *Inquiry*, of which he wrote a most favorable review in the *Annales de legislation et d'économie politique*. This review appeared in November 1822, *i.e.*, two months after Ricardo's meeting with Sismondi in Geneva. One wonders whether it was Ricardo who drew the attention of Sismondi to these two essays; the more so as Sismondi says that he "had received them together quite recently." [1] John Barton was naturally pleased to be able to refer later to this favorable review.

In his third essay, on the *Excess of Population*, the author first noted that while during the period 1700–50 population increased less than 1 million, during the period 1770–1821 the increase was more than 4½ millions. By 1830 the rate of increase was about 2 millions in ten years. Meanwhile, production of bread-corn increased much less. In order to feed the larger population corn had to be imported from continental Europe. But what would happen if the whole of Europe had a bad crop?

A similar rapid increase of population was observed in the sixteenth and seventeenth centuries, the first consequence of which was a fall in real wages. When the Plague broke out, the laboring population fell an easy victim of it, owing to years of poverty and suffering. As if anticipating the potato famine of 1846, Barton wrote:

> "It will be asked, do I seriously apprehend such consequences from the overgrowth of population at the present day? I do, most seriously. It appears to me as certain as the rules of arithmetic, that if we have yearly 200,000 additional mouths to feed, and little or no additional production of corn, the excess of numbers must and will perish sooner or later, either by famine, or plague." [2]

What was the remedy?

> "In order to avert the threatened evil, it may perhaps be recommended by Mr. Malthus, or his disciples, to encourage increased prudence in forming matrimonial connexions; and thus to guard against the overgrowth of population in time to come. Undoubtedly it is right that every man should have strongly impressed on his mind the duty of delaying to

[1] "Quoique les deux ouvrages . . . aient paru à trois années de distance, et que le plus ancien soit déjà publié depuis cinq ans, nous croyons devoir attirer sur tous deux en même temps, l'attention de nos lecteurs. Ils nous sont parvenus tout récemment ensemble, ils peuvent être considérés comme la continuation l'un de l'autre, ils sont peu connus sur le continent, et ils méritent de l'être davantage." (*Op. cit.*, November 1822, p. 82.)

[2] *Excess of Population*, p. 14.

> marry till he possesses the means of supporting a wife and family; but to look for any security against the threatened calamity from a principle of such slow operation as this would be utterly vain." [1]

Some had proposed to put under cultivation waste lands, or to replace the present mode of cultivation by spade cultivation. Barton did not object to the first, but gave his reason for doubting that it could solve the problem. And he adduced weighty technical reasons for discounting the hopes which could be placed in the second. There is, however, another solution to the problem, Barton emphasised, which is both the cheapest and the most advantageous one, and that is emigration. For once established overseas, the emigrants would be able to repay the expenses incurred by the Government for their settlement, while forming at the same time flourishing colonies which would be to the benefit of all. The example of New South Wales had amply proved this.

John Barton's insistence on the importance of emigration was in harmony with his realistic outlook. He deplored "that the great majority of political economists direct their attention almost exclusively to the circumstances which influence the accumulation of *wealth*,[2] abstractedly speaking. Not only do they seem to forget that wealth is not happiness, they even leave out of their consideration the manner in which that wealth is distributed . . ." [3]

V

The occasion for John Barton's fourth essay, on the *Corn Laws*, was furnished by certain developments which made the author apprehend that a repeal or modification of the existing Corn Laws was about to be considered by Parliament. This is the most comprehensive of Barton's writings. In it the author comes closest to formulating a complete theory of exchange.

The most significant part of the essay represents a criticism of the free-trade doctrine. John Barton emphasised that even if free trade (in corn and otherwise) should add to the collective income of the whole community, that addition would not deserve to be considered as a benefit, unless the condition of the great body of the people is thereby improved.[4] But, says he, even on the narrow gound on which they have chosen to place the question, the advocates of Free Trade are wrong. Assuming that it is possible to get corn from abroad on better terms than to produce it at

[1] *Excess of Population*, p. 15.
[2] Italics in the original.
[3] *Excess of Population*, p. 42.
[4] *Corn Laws*, p. 24.

home, " is it supposed, then, that the ploughmen no longer wanted in Sussex might travel to Manchester, and there find employment as cotton-spinners? . . . The slightest attention to facts might shew that a district overburdened with population is scarcely ever relieved, unless by the cruel process of extermination." [1] Thus, the increased difficulty of procuring employment would greatly over-balance the advantage arising from a lower price of bread to the consumer.[2] Moreover, " in the meantime the race of the small farmers who just pay their way from year to year, and month to month, would be ruined, and added to the number of starving paupers." [3]

That for the time being the country enjoyed prosperity was visible from several circumstances. But these circumstances " may yet be attended with danger and inconvenience "; [4] for " the increase of capital and of population up to a certain point is a national good,—beyond that point a national evil." [5] As an example of a really prosperous country John Barton gave Switzerland, the population of which grew very slowly. " If we had fewer people, and less capital," says he, " we should not, indeed, be *richer* than at present, in the ordinary acceptance of the word; but we should certainly be more *thriving*." [6] He viewed with concern the economic future of Great Britain.

> " It is more than probable," [he wrote] " that the channels of commercial industry, at all times liable to the most capricious and inexplicable changes, will one day desert us; and this whole kingdom would then become one great decayed manufactory." [7]

The basic factor on which prosperity depends was, according to John Barton, the abundance of new and fertile land. The relevant passage deserves to be quoted *in extenso*:

> " It is the limited extent of our home territory that prevents our labourers from obtaining as high wages as those of America; while at the same time it reduces the profits of their employers. The truth of the proposition would be apparent, if we consider what results would follow, supposing some thousands of square miles of good land to rise out of the Atlantic, adjoining the coast of Cornwall. Such a territory would soon absorb our superfluous capital and population. We should hear no more of manufacturers selling at cost price to elbow each other out of the market, of farmers unable to pay their rents, and able labourers working on the roads. Our industrious workmen would

[1] *Corn Laws* p. 29. [2] *Ibid.*, p. 44. [3] *Ibid.*, p. 59. [4] *Ibid.*, p. 62.
[5] *Ibid.*, pp. 62–3. [6] *Ibid.*, p. 73 (italics in the original). [7] *Ibid.*, p. 42–3.

> flock by thousands to enclose and cultivate this new-found-land. Then what timber and iron would be required for the erection of the requisite buildings! What ploughs and spades! What additional food and clothing for the labourers; now earning good wages instead of starving on miserable parish allowances! What shipping would be wanted to convey all these commodities to their destination! What seamen to navigate the shipping! What increased consumption of excisable articles! What increase of revenue! What taxes might be taken off in consequence of this increase!" [1]

John Barton accordingly recommended that the Government encourage emigration to Canada. The immigrant here can acquire land easily, and "from a soured, miserable, and disaffected pauper, he is converted into a thriving, industrious and loyal freeholder." [2]

It has been objected, he reminded his readers, that population would increase "consequent on the alleviated pressure of poverty; and that we should thus be left, after a short time, in as great a difficulty as the present. This objection, it will be observed, rests upon the assumption that every improvement in the condition of the people tends to promote habits of improvidence; while on the other hand, every increase of suffering tends to beget habits of prudence and forethought." [3] With this manner of thinking John Barton had disagreed in his reply to Malthus,[4] and he emphasised this again.

John Barton's definition of political economy was "the science which teaches how to promote the physical well-being of the community." This science "is not only abundantly worthy of the attention of every statesman, but constitutes an essential and indispensable part of his business. I will not, however," he continues, "conceal that in my estimation the writings of certain modern professors of this science are not only useless, but positively mischievous; as tending to vulgarize the understandings of their readers, and to instil into their minds false notions on questions of great moment." [5]

Some economists, he observed, have argued that cheap government, freedom of trade and security of property are all that are needed to guarantee prosperity. These conditions are certainly among the sources of national prosperity—yet they "are so far from comprising the whole solution of the question, that their influence is quite insignificant in comparison of other influences having their

[1] *Corn Laws*, p. 74. [2] *Ibid.*, p. 82. [3] *Ibid.*, p. 76.
[4] Cf. *Excess of Population*, pp. 39–40. [5] *Corn Laws*, pp. 84–5.

roots more deeply seated in our mental constitution—influences which are wholly overlooked by the writers alluded to." [1] If the above three factors were the only ones on which national wealth depends, Switzerland would be the richest country in Europe. This is not so, and yet "such a people may prefer the tranquil enjoyment of the possessions transmitted to them by their forefathers to the exciting and hazardous pursuits of commercial speculation; happy in moderate competence, but unacquainted with opulence." [2] The lasting prosperity of the people of Switzerland was due, according to John Barton, to two factors: few births and emigration.[3] And he concluded:

> "I return then to the proposition with which I set out at the beginning of the present section. The disease under which the body politic is labouring is a plethora of population and capital. The remedies to be employed are, on the one hand, colonization; on the other hand, due prudence and moderation with regard to marriage and with regard to commercial speculations." [4]

VI

During the following nineteen years of his life John Barton published only two tracts, both of lesser importance. The one, on the *Rate of Mortality*, represents an up-to-date version of Chapter I of his essay on the *Corn Laws*. The other explains the origin of *The Monetary Crisis of 1847*, which Barton had correctly predicted.

In March and April 1846 John Barton had addressed to the editor of the *Standard Newspaper* two letters in which he predicted that the lifting of protective duties, which was decided upon by the Cabinet of Sir Robert Peel, was going to bring about an increase of imports; that gold would have to be exported in payment for these additional imports (because exports would inevitably increase more slowly, if at all); that as a consequence banks would cut their advances and discounts, and that this would prove fatal to many merchants. Barton pointed out that "no such disproportionate and sudden increase of imports ever yet took place without being followed by a monetary crisis," and presented trade statistics covering a period of twenty years to prove his point.

Throughout 1846 and the early part of 1847, Sir Robert Peel and a member of his Cabinet denied the probability of a crisis. In

[1] *Corn Laws*, pp. 86–7. [2] *Ibid.*, p. 99. [3] *Ibid.*, pp. 103–4.
[4] *Ibid.*, p. 107. (Barton showed also the inconsistency of those who advocated a fixed duty on the importation of corn.)

October 1847 the crash came. Modest as he was, John Barton could not resist the temptation of confronting these erroneous and misleading utterances with his own accurate prognostic. Accordingly he had a reprint made of his letters, followed by extracts from the soothing speeches of the representatives of the Government.

> "It would be interesting to know" [he wrote in his concluding remarks] "whether Sir Robert Peel still wishes that gold should be sent out of the country—whether he still thinks that no such export can derange the commercial interests of the empire—above all, whether he is of opinion that the alarm now prevailing in the commercial world is 'entirely unjustified by any real cause.'"

And he ended this last tract of his with these words: "A theory which has so signally failed to yield correct results in practice must surely be abandoned as worthless."

VII

Early nineteenth-century writers were faced with a paradox which few of them rightly sensed and none could explain. On the one hand, the fall of mortality, and the concomitant population increase, showed beyond any measure of doubt that living conditions were improving in general. On the other hand, the distress in many districts was an obvious fact, and it was only too natural that the attention of statesmen and scholars should have been directed to the discovery of its causes and remedies. Hence the controversy about the effects of the Poor Laws and those of the Corn Laws. It was not until much later that it was noted, that while the general trend of production, income, well-being and longevity may well be upward, this trend may be irregular, and not a steady one. Every so often there would be a slump. Markets would be glutted; an epidemic of bankruptcies would break out; unemployment would deprive large segments of the population of their only source of income. There would be starvation and disease. Then something would happen, trade would pick up again; unemployment would diminish, perhaps disappear, until the next spasm.

John Barton did not define or explain this zigzag movement. But there is no question that he and Simonde de Sismondi were the first authors who explained satisfactorily the origin of unemployment—the "decreased demand for labour"—and the part played by emigration and colonisation, that "something" which made temporary revivals possible.

Although he insisted on the importance of distinguishing be-

tween wealth and happiness, John Barton was prepared to meet the adepts of the free-trade doctrine on their own ground. He pointed out that even a great accumulation of wealth in a community does not guarantee by itself that the majority of the community's members will not be left to live in squalor. And he explained the co-existence of opulence and misery by the fact that an increase of wealth, or capital, does not automatically increase the demand for labor. Because fixed capital grow faster than circulating capital, the accumulation of capital may actually lessen the demand for labor and thus cause unemployment and distress.

Full employment and high wages John Barton connected with the availability of free land—the " thing " which made prosperity possible throughout the greater part of the nineteenth century. In the United States and Canada, where the actual or potential unemployed could acquire land on nominal terms, unemployment was unknown and wages were high, regardless of the population increase. In England there was no free land to be had, hence unemployment, pauperism and crime. He might have added that, occasionally, these evils were relieved, partly by actual emigration and partly by the additional demand for the products of British industry originating in the new markets established in the process of colonisation.

John Barton agreed that the rapid population growth which resulted from the fall of mortality did not make the condition of the laboring classes any easier. Therefore, he was not opposed to measures likely to bring down the birth-rate and re-establish in this way the disrupted demographic equilibrium. But he was aware of the slowness with which demographic factors operate. Consequently, he expected much more from emigration and colonisation, and advocated positive steps in this direction.

The originality of John Barton's views makes it rather difficult to classify him under any one of the familiar ideological categories. However, one thing is clear. By his penetrating criticism of the Ricardian free-trade doctrine and its Malthusian complement on the demographic plane, by his defense of the Poor Laws, by his objection to the abolition of the Corn Laws and by his plea in favour of emigration and settlement at public expense, he showed that he was decidedly for public regulation of the economic processes and against the legalisation and glorification of Mammon.

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Appendix. Complete List of John Barton's Writings

(a) *Economic Writings*

(1) *Observations on the Circumstances which Influence the Condition of the Labouring Classes of Society*, London, 1817, 88 pp.

(2) *Inquiry into the Causes of the Progressive Depreciation of Agricultural Labour in Modern Times, with Suggestions for its Remedy*, London, 1820, 128 pp.[1]

(3) *A Statement of the Consequences Likely to Ensue fom our Growing Excess of Population, if not Remedied by Colonization*, London, 1830, 48 pp.

(4) *An Inquiry into the Expediency of the Existing Restrictions on the Importation of Foreign Corn, with Observations on the Present Social and Political Prospects of Great Britain*, London, 1833, 128 pp.

(5) *The Influence of the Price of Corn on the Rate of Mortality*, Chichester, 1844, 16 pp.

(6) *The Monetary Crisis of 1847, Prediction and Counter-Prediction*, Chichester, 1847, 12 pp.

(b) *Other Writings*

(7) *A Lecture on the Geography of Plants*, London, 1827, 94 pp.

(8) " A Summer's Evening at Stoughton," in *Chichester Magazine*, No. 2, 1838.[2]

(9) " A Winter's Evening at Stoughton," in *Chichester Magazine*, No. 2, 1838.[3]

[1] The Copy of this essay owned by John Crerar's Library (Chicago) is autographed : " From the author, August 1832."

[2] Like the *Lecture on the Geography of Plants*, this piece shows, in the form of a dialogue of two friends, the author's interest in and knowledge of botany.
N.B. The *Lecture* is not in the form of a dialogue.

[3] Contains a half-serious, half-humorous appraisal of a number of writings by famous authors, in the form of a conversation of three friends.

ESTIMATES OF THE FREE DEMAND FOR RATIONED FOODSTUFFS

FEW people would like to regard food rationing as a permanent feature of the British economy, although it has had to be continued for a much longer period than could have been foreseen when it was introduced. The prospect of a partial or complete abolition of the rationing system will therefore always be borne in mind, and it is then imperative to know what quantities of the commodities concerned would be demanded in a free market after derationing.

The question which we shall try to answer here is : how large a supply would be required to satisfy the unrationed demand of United Kingdom consumers at the prices obtaining in the middle of 1951 ? In order to arrive at such estimates we shall naturally have to make a number of simplifying assumptions and use incomplete or approximate statistical data, so that the results are necessarily uncertain. We shall indicate the principal sources of inaccuracy; at the same time we wish to state our conviction that the following estimates, if properly interpreted, will be of real usefulness in the consideration of economic policy.

The method employed consists essentially in the extrapolation of pre-war experience to the circumstances of 1951, making allowance for such changes as can be ascertained and expressed quantitatively. The basis for comparison will be the year 1938, both because it was the last year in which there was a free market to register the unconstrained preferences of consumers and because the statistics for that year are relatively complete and comparable to post-war figures.

The main determinants of consumer demand for any good are :

(1) tastes;
(2) the level and distribution of real disposable income;
(3) the prices of the good itself and of its substitutes and complements;
(4) related rations.

We shall discuss these factors in turn, and then indicate how their effect was measured, if at all.

(1) *Tastes* have no doubt been influenced by the course of events since 1938, but this may have affected basic foods to a

smaller extent than, say, cigarettes or coffee. In any case there is no information on these changes in preferences, and we have perforce ignored them. Demand analyses for the inter-war period showed that although the demand for some of the commodities here considered appeared to move steadily upwards or downwards independently of the economic variables, these long-term trends were very small and in no case statistically significant. We have therefore ignored these movements also.

(2) The level of *real disposable income* (consumer income after direct taxes on income in £ of 1938 purchasing power) has not changed much between 1938 and 1951. Although for some time in 1949 and 1950 income per head had been rather higher than in 1938, the increase in direct taxation and in prices after the Korean crisis reduced the increase of 1951 over 1938 to only $1\frac{1}{2}\%$. As the income elasticities for rationed foods are nearly all less then unity, this means a rise of less than $1\frac{1}{2}\%$ in the free demand for them. In the case of " inferior " goods demand will fall.

The distribution of disposable income is well known to be less unequal now than it was in 1938. Income has been shifted from households with high incomes to households with low and moderate incomes. It depends on the shape of the Engel curves (which represent the relation between income and the consumption of a particular item) how this will affect demand. The Engel curves used here are, apart from some complications to be discussed below, of the constant-elasticity or logarithmic type :

$$y_i = a_i M^{b_i} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

where y_i is the quantity of the ith good and M disposable income; b_i is the income elasticity and a_i is a scale constant. If the income elasticity lies between 0 and 1 a redistribution of income as described will increase the free demand for the good concerned, for the potential consumption of those with high incomes will fall by less than the increase in demand from those benefiting. We have in fact

$$dy_i = a_i b_i M^{b_i - 1} dM \quad . \quad . \quad . \quad . \quad . \quad (2)$$

from which we can see that if $b_i - 1 < 0$ the absolute value of dy_i will be lower as the M which experiences the change of dM is higher. The opposite situation will arise if $b_i > 1$, *i.e.*, if the good is a luxury in the technical sense, or if it is inferior ($b_i < 0$), although the reasons for the fall in demand are different in the two cases. If $b_i = 0$ or $b_i = 1$ redistribution of income has no effect on consumption.

There is abundant evidence for preferring curvilinear Engel

functions such as (1) to straight lines;[1] if the latter type held empirically the distribution of income could be left out of account.[2]

In practice it was found necessary to introduce two additional variables into (1). Family size has been taken into account by dividing both consumption and income by the number of persons per family.[3] Furthermore, comparisons between the 1937–38 working class and the 1938–39 middle class budget studies brought to light differences in consumption which could not be explained by differences in income and family size alone, and which were therefore ascribed to social factors. On the other hand, the assumption that the income elasticities (or more precisely the elasticities with respect to total expenditure) were the same for the two groups appeared to be acceptable. It was therefore considered sufficient to adjust the constant a_i in equation (1) by a "social class coefficient."[4] The equation can then be rewritten

$$\frac{y_i}{n} = a_i c_i \left(\frac{M}{n}\right)^{b_i} \quad . \quad . \quad . \quad . \quad . \quad (3)$$

where n is the number of persons and c_i the social class coefficient, which equals 1 for working-class families and is to be estimated for other households. It is usually found to be smaller than one for basic foods (see Appendix B).

These refinements imply that we have to look separately at income in working-class and in other families and that it is no longer total household income, but income per person which is relevant.

The actual extent of the redistribution of income since 1938 is difficult to evaluate owing to the notorious inadequacy of the data. Income-tax statistics are not directly applicable because of the differences between "tax units" and households: many households consist of more than one tax unit. Details of the calculations are given in Appendix A.

(3) *Own and related prices* have been deflated by the general price level of consumer goods. Strictly speaking, the latter should have been corrected because of the shortages in some important non-food markets, such as houses and motor cars,

[1] Cf. H. S. Houthakker, "The Econometrics of Family Budgets," *Journal of the Royal Statistical Society*, Series A, 1952 and the literature there quoted. This paper will be referred to as "Family Budgets."

[2] Cf. P. de Wolff, "Income Elasticity of Demand: a Micro-economic and a Macro-economic Interpretation," ECONOMIC JOURNAL, 1941, p. 140.

[3] In principle one would have to give different weights to persons of different age and sex according to the commodity concerned, but this is not yet possible statistically.

[4] Cf. "Family Budgets," especially Section 7.

which deprive prices in those markets of their economic significance. Unfortunately there is no satisfactory method of making this allowance. The fact that we use an index with current weights in itself lessens the significance of these disturbing factors.

Statistically it is not possible to measure more than a few of the cross-elasticities (elasticities with respect to prices of substitute or complementary goods); only those that improved the regression equations have been taken into account. In several cases the influence of other prices is found to be at least as important as that of the commodity's own price.

(4) *Related rations* have to be considered if some goods are rationed while others are not, as this may affect the demand for the unrationed commodities. Thus if margarine were free while butter were still restricted this would have a somewhat similar effect on margarine demand as a high butter price: in both cases there would be a substitution of margarine for butter. This analogy has been worked out theoretically elsewhere [1] and has been applied here in one case, although this implies a generalisation of the theory to finite changes and to aggregate demand which in principle requires separate justification.

We now come to the estimation of the demand functions, which has proceeded along well-known lines,[2] combining family budgets and time series. The principal innovation consists in allowing for quality variations with income: if income goes up, the quantity bought does not go up as rapidly as the money expenditure on an item of consumption because the average price per unit goes up as well.[3]

The family budgets utilised are the two pre-war surveys already referred to.[4] The time series are for the period 1920–38, except in the case of butter and sugar which were still rationed in 1920; the basic figures are due to Stone.[5]

We have to make it clear that our results do not bear on all the consequences of the problem of derationing, especially when the related problem of subsidies is taken into account. If

[1] J. Tobin and H. S. Houthakker, "The Effects of Rationing on Demand Elasticities," *Review of Economic Studies*, 1950–51, p. 140.

[2] Cf. J. Tobin, "A Statistical Demand Function for Food in the U.S.A.," *Journal of the Royal Statistical Society*, Series A, 1950, p. 113; Richard Stone, "The Demand for Food in the United Kingdom before the War," *Metroeconomica*, 1951, p. 8.

[3] Cf. "Family Budgets," Section 4; more extensively H. S. Houthakker and S. J. Prais, "Les Variations de Qualité dans les Budgets de Famille," *Economie Appliquée*, 1952.

[4] Further details of the analysis in "Family Budgets." [5] *op. cit.*

demand were brought into line with the present level of supplies by increasing prices according to our calculations this would have important repercussions on wages and other incomes, as well as on taxation, since subsidies would disappear. On the other hand, a rise in prices might lead to increased supplies from abroad or from home producers; in fact, from a policy point of view there is no reason to attach special significance to current levels of supplies. Our calculations bear only on demand,[1] however, and we cannot enter into these wider questions. Our object is to estimate the present gap between supply and free demand; although we have taken into account a considerable variety of determinants of consumption our technique is still essentially a partial equilibrium method.

We shall now discuss the calculations for individual commodities, set out in Appendix B. These have been made for all rationed foods with the exception of cheese and sweets, for which no satisfactory demand analyses could be undertaken. Some minor varieties of the meat and cooking-fats rations have also been omitted.

It will be seen that the most important changes in free demand since 1938 would result from price variations; the effect of income never amounts to more than a few per cent. We have, nevertheless, thought it worth while to study income redistribution in some detail, as this seems to be the only way to assess its importance and because great significance is sometimes attached to it.

Turning to the individual foods, we see that universal de-rationing in the circumstances of mid-1951 without other accompanying measures would reveal large shortages in tea, butter and most varieties of meat, a small shortage of sugar, a small surplus of bacon and larger surpluses of eggs, cooking fats and margarine. These surpluses, needless to say, would be the result of people's trying to buy more of other commodities that have been freed. The position can be most conveniently surveyed if we look at the foodstuffs in groups.

Let us first consider tea, of which current levels of supply (corresponding to a basic ration of 2 ounces per week) would have to be increased by 46% to meet free demand. On the basis

[1] This is not strictly true, as we have used "single equation methods" which may not be completely accurate in separating demand and supply factors. In other words, our demand elasticity may in fact include a certain element of supply response, but this is not necessarily a drawback for the present purpose. The information for undertaking a "simultaneous equations" approach is unfortunately not available.

of a price elasticity of −0·39 equilibrium could also be attained by a price rise of about 160%, which is, of course, beyond all possibilities and far more than the current rate of subsidy. Without a considerable increase in imports the de-rationing of tea is therefore a remote prospect.

Sugar is a more interesting case, as the shortage is estimated at only 16% (with a basic ration of 10 ounces and various extra allowances). This was before the recent price increase, which reduced the calculated shortage substantially. It should be pointed out, however, that the take-up of the sugar ration at the moment shows no sign of saturation, so that our conclusions must be regarded with some caution, as indeed they must be in all cases. We would, nevertheless, venture to predict that a small increase in supplies, or a small rise in prices (*e.g.*, a removal of the subsidy, which would add 17% to the retail price) might change the situation drastically. Alternatively, when a decrease in some rations is contemplated sugar would seem to be one of the places where least harm would be done.[1]

For the rest we can distinguish two groups of rationed foods, viz., fats and meat. In the fats group the crucial commodity is butter, for which the free demand would correspond to a basic ration of 7·1 ounces instead of 4 ounces. If this quantity were in fact available margarine demand would drop to 41% of present supply and the demand for cooking fats to 64% of present supply. In absolute figures this means a fall of 2·4 ounces of margarine and 0·8 ounces of cooking fats, so that the total weight of fat consumption would remain unchanged. Fats rationing is therefore necessary because the composition of supplies, rather than their physical quantity, does not agree with consumers' preferences. This is also reflected in the well-known fact that the margarine and cooking-fats rations are not fully taken up.[2] No practicable price adjustments could remedy this situation.

Especially in the case of margarine, the demand elasticities are somewhat uncertain owing to statistical difficulties, resulting apparently from improvements in the quality of margarine.

[1] The situation is somewhat complicated by an important trade consumption of unsubsidised sugar, so that it would not be practicable to de-ration while retaining the subsidy.

[2] We have found no evidence of a significant complementarity between sugar and margarine or cooking fats. If this existed the low take-up of these commodities might be due to the shortage of sugar, which would prevent people from making cakes, so that fats consumption would rise if sugar were freed; this is in fact sometimes advanced as an argument for maintaining margarine rationing. In any case, according to our calculations the free demand for sugar does not exceed present supplies very seriously.

This factor may well have continued to operate during and after the war, and may have been accompanied by a fall in the quality of butter, thus upsetting our assumption of unchanged tastes, but it is difficult to take it into account. If we use the elasticities calculated to estimate the effect of butter rationing on margarine demand [1] we find an elasticity of the latter with respect to the former of −0·56, *i.e.*, an increase in the butter ration of 1% reduces free margarine demand by 0·56%. Applied to a butter ration of about 57% of free demand, and combined with the changes in income and the price of margarine given in the commodity table, we would get a surplus of margarine of 41% of present supplies, instead of the 59% we get when butter is assumed to be free. Consequently, there would still be a substantial surplus; too much should not be made of this calculation, however, which is based on very uncertain premises and given merely as an example.

The last group we have to consider consists of meat and its substitutes bacon and eggs.[2] Taking the five varieties of carcase meat together, we find that free demand would exceed present supplies by approximately 100%; there is a shortage of all types of meat, which is most marked in the case of pork and home-produced mutton. Only in the case of imported mutton would demand in a completely free market be anywhere near current supplies, which does not, of course, mean that the de-rationing of this item could be contemplated without large increases in the supplies of other commodities.

The small surpluses of bacon and eggs, of 6% and 18% respectively, can entirely be explained by the shortage of meat. It will be noticed that these surpluses would be considerably larger but for the low current price of meat, which on the other hand helps to keep free meat demand at a high level. It would not be true to say that an increase in the price of meat would go far towards relieving the meat shortage, but it would nevertheless be a useful preliminary to de-rationing, as some of the increased meat supplies then required would no longer serve merely to replace available supplies of bacon and eggs: under rationing the prices of rationed goods only influence the demand for unrationed commodities through income effects; their level is

[1] Cf. Tobin and Houthakker, "The Effects of Rationing on Demand Elasticities," *loc. cit.*, especially p. 142, formula (3·8).

[2] Cheese also appears to belong to this group, but the heterogeneity of this commodity has made it impossible to arrive at statistically and theoretically acceptable demand elasticities.

therefore only of monetary and budgetary importance and its discussion outside the scope of this paper.[1]

In concluding we wish to acknowledge the help of the Statistics and Intelligence Division of the Ministry of Food at many stages of the work; the Ministry is not responsible for any opinions or calculations here presented. Mr. J. R. N. Stone, Director of the Department of Applied Economics, has given us the benefit of his advice. We are also greatly indebted to Mr. S. J. Prais, who has assisted in the preparation of this paper. The computations were carried out at the Department and at the National Institute of Economic and Social Research. Considerable use was also made of the electronic computer of the University Mathmatical Laboratory in Cambridge.

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Appendix A

To allow for redistribution of income it was necessary to divide the population into two classes, to one of which the coefficients c_i should be applied. In accordance with the two budget surveys just referred to, the dividing line has been taken at an income of the head of the household before tax of £250 in 1938. It has been assumed that disposable household incomes of families with a given size in the top group are distributed according to the Pareto curve

$$N(M) = AM^{-\alpha} = A\alpha\int_{M}^{\infty} x^{-\alpha-1}dx. \quad . \quad . \quad . \quad (A1)$$

where $N(M)$ is the number of incomes greater than M and A and α are constants. There is little or no information in the distribution of low incomes, particularly before the war, and as redistribution within that group can have only a very small effect on demand, all households belonging to it were supposed to have the same disposable income. These hypotheses, crude though they are, do not seriously distort the crucial fact of a large-scale transfer of income from the higher to the lower group.

The next step is to work with income per person rather than household income. The paucity of information on this subject again calls for additional assumptions. The most remarkable

[1] We have not been able to calculate the shortage of bacon and eggs when meat rationing is taken into account, as we did for margarine. The reason is a theoretical defect of the estimates of the various price-elasticities; although the own-price and cross-price elasticities of the different kinds of meat have the correct signs, their magnitudes are such that the own-price elasticity of total meat is positive.

change is the considerable increase in the number of households from about 12·5 millions in 1938 to nearly 15 millions in 1951,[1] leading to a decrease in average family size. For the lower income group we have again assumed that all households are of average size; for the top group (4) has been applied to each family size n separately, viz.,

$$N_n(M) = A_n M^{-\alpha_n} \quad . \quad . \quad . \quad . \quad . \quad . \quad (A2)$$

where the coefficients α_n may differ allow for the larger number of supplementary earners in larger families. The distribution of income per head for each family size is then

$$N_n\left(\frac{M}{n}\right) = A_n\left(\frac{M}{n}\right)^{-\alpha_n} \quad . \quad . \quad . \quad . \quad (A3)$$

Combining (3) and (A3) and using (A2), we get the following expression for the total consumption of the ith good by families of size n

$$na_ic_iA_n\alpha_n\int_{M/n}^{\infty} x^{b_i-\alpha_n-1}dx = na_ic_iA_n\frac{\alpha_n}{\alpha_n-b_i}\left(\frac{M}{n}\right)^{b_i-\alpha_n} \quad (A4)$$

The total number of persons in this size group being given by (A3) multiplied by n, we find for their average consumption per head

$$a_ic_i\frac{\alpha_n}{\alpha_n-b_i}\left(\frac{M}{n}\right)^{b_i} \quad . \quad . \quad . \quad . \quad . \quad (A5)$$

If we take M to be the dividing line required by the social class coefficient (say M_c), and write $M_c/n = x_n$, we get for the average consumption per head of all families taken together:

$$y_i = w_0a_ix_0^{b_i} + \sum_{n-1}^{\infty} w_na_ic_i\frac{\alpha_n}{\alpha_n-b_i}x_c^{b_i} \quad . \quad . \quad (A6)$$

where the ws indicate the relative frequency of each type of family in the population (so that $\Sigma w = 1$; w_0 is the frequency of families in the lower income group) and x_0 is the average income per head below the dividing line.

The numerical work on income distribution is based principally on Inland Revenue data, on the National Income White Paper (forecasts for 1951 were obtained) and on a sample survey carried out by the Ministry of Food in September 1950. These sources of information are not completely consistent, and various adjustments had to be made. The White Paper figures were used to compare real disposable income per head in 1938

[1] Estimates for 1937 and 1949 are given in *The Home Market*, 1950 Edition (by F. Harrison and F. C. Mitchell, revised by Mark Abrams).

and 1951, showing the $1\frac{1}{2}\%$ increase already mentioned in the text. Inland Revenue data for 1937–38 [1] had to be reconverted into household income per head, for which purpose the distribution of families by size [2] was assumed to be independent of income. The treatment of incomes below the line has been explained in the text; their income per head was found to be £63. For the other households of each size class (families with nine or more persons were ignored) the number of supplementary earners was taken to be proportional to the number of persons other than the head of the household (the chance of such a person being an earner was 23·3%). The average income of supplementary earners was £191, consequently the average contribution of persons other than the head to household income was £45 (23·3% of £191); this figure has been used both for 1938 and for 1951 (in 1938 prices). The lower limit M_c for each household size n was therefore taken to be £$\{250 + 45\ (n - 1)\}$, so that for that size

$$x_n = £\frac{250 + 45\ (n - 1)}{n} \quad . \quad . \quad . \quad \text{(A7)}$$

with some allowance for taxation in the smaller size classes. Similar calculations for 1951 were made on the basis of the Ministry of Food income survey (x_0 was equal to £70). The w_n in (A6) were taken from the distribution of families by size ($w_0 = 0{\cdot}81$ in both years) and the a_n were in fact taken to be independent of n. By applying (A6) to income per head (*i.e.*, by putting $a_i = b_i = c_i = 1$) we can then estimate α by the well-known "mean law," [3] obtaining $\alpha = 2{\cdot}34$ for 1938 and $\alpha = 3{\cdot}09$ for 1951. These values are very different from those between 1·5 and 2 one usually finds quoted, but these refer to the distribution of incomes before tax rather than to incomes per head after tax.

Finally, (A6) can be computed for 1938 and 1951, and their ratio represents the proportionate effect on demand of the combined change in the level and distribution of income between these two dates. It will be seen that these effects are relatively small, but this does not appear to be due to the methods of calculation used, for rather different methods used in earlier stages of this inquiry gave much the same results.

[1] As dealt with by T. Barna, *Redistribution of Income through Public Finance in 1937* (Oxford, 1945) and H. S. Houthakker, "Some Calculations on Electricity Consumption in Great Britain," *Journal of the Royal Statistical Society*, Series A, 1951, p. 359, especially Table I.

[2] Given in *The Home Market*, *loc. cit.*, p. 43.

[3] Cf., for instance, Barna, *loc. cit.*, p. 258, formula (3).

Appendix B

The commodity tables now following give for each item the effects of the various changes in the factors determining demand, together with the relevant elasticities which are set out in more detail in Appendix C. The changes are expressed as ratios, so that an entry 1·052 means an increase of 5·2%. The change due to income has been calculated by the method of Appendix A, using the income elasticity and the social-class coefficient c as stated in the table. The product of the changes due to each factor (last column) is the total change in demand again expressed as a ratio with the 1938 figure equal to unity. When this is also done for current supply (*i.e.*, supply at the annual rate for the middle of 1951) the " shortage " follows, expressed as a fraction of current supply. Thus a shortage of 0·34 means that current supply would have to be increased by 34% to be equal to demand in a completely free market at current prices and income. A negative shortage of say −0·16 means that 16% of present supply would be surplus in a free market at current prices.

Commodity Table No. 1.—Tea

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income. . . . . $c = 0·398$	—	0·39	1·033
2. Own price	0·74	−0·39	1·123
3. Related price : Coffee	1·812	0·21	1·036
Cumulative effect of changes on demand			1·202
Change in supply since 1938			0·822
Current shortage			0·462

Commodity Table No. 2.—Sugar

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income . . . . $c = 0·631$	—	0·26	1·020
2. Own price	0·967	−0·43	1·015
Cumulative effect of changes on demand			1·035
Change in supply since 1938			0·891
Current shortage			0·162

COMMODITY TABLE NO. 3.—Butter

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income $c = 0{\cdot}848$	—	0·39	1·025
2. Own price	0·812	−0·48	1·105
Cumulative effect of changes on demand			1·133
Change in supply since 1938			0·640
Current shortage			0·770

COMMODITY TABLE NO. 4.—Margarine

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income. $c = 0{\cdot}842$	—	−0·24	0·980
2. Own price	0·818	−0·75	1·163
3. Related price: Butter	0·812	0·27	0·945
Cumulative effect of changes on demand			1·077
Change in supply since 1938			2·639
Current shortage			−0·592

COMMODITY TABLE NO. 5.—Cooking fats

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income. $c = 0{\cdot}576$	—	0·21	1·017
2. Own price	0·83	−0·56	1·107
Cumulative effect of changes on demand			1·126
Change in supply since 1938			1·713
Current shortage			−0·343

COMMODITY TABLE NO. 6.—Eggs

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income. $c = 0{\cdot}847$	—	0·47	1·029
2. Own price	1·215	−0·35	0·934
3. Related price: Total meat	0·732	0·70	0·804
Cumulative effect of changes on demand			−0·772
Change in supply since 1938			0·948
Current shortage			−0·185

Commodity Table No. 7.—Bacon

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income . . . . . $c = 0{\cdot}363$	—	0·46	1·039
2. Own price	0·848	−0·86	1·152
3. Related price : Total meat . . .	0·732	1·59	0·609
Cumulative effect of changes on demand			0·729
Change in supply since 1938			0·777
Current shortage			−0·062

Commodity Table No. 8.—Pork

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income . . . . . $c = 0{\cdot}257$	—	0·51	1·046
2. Own price	0·986	−0·66	1·009
3. Related price : Mutton.	0·650	0·82	0·702
Cumulative effect of changes on demand			0·741
Change in supply since 1938			0·099
Current shortage			6·488

Commodity Table No. 9.—Home-produced beef and veal

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income . . . . . $c = 0{\cdot}832$	—	0·34	1·023
2. Own price	0·606	−0·41	1·228
3. Related price : Imported mutton . . .	0·706	0·50	0·840
Cumulative effect of changes on demand			1·056
Change in supply since 1938			0·510
Current shortage			1·070

COMMODITY TABLE No. 10.—Imported beef

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income . . . . . $c = 0{\cdot}648$	—	−0·27	0·977
2. Own price	0·861	−0·32	1·049
3. Related price : Home produced beef . .	0·606	1·02	0·600
Cumulative effect of changes on demand			0·615
Change in supply since 1938			0·256
Current shortage			1·401

COMMODITY TABLE No. 11.—Home-produced mutton

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income . . . . . $c = 1{\cdot}082$		0·74	1·025
2. Own price	0·591	−1·67	2·407
3. Related price : Home produced beef and veal .	0·606	1·68	0·431
Cumulative effect of changes on demand			1·064
Change in supply since 1938			0·364
Current shortage			1·922

COMMODITY TABLE No. 12.—Imported mutton and lamb

Demand factor.	Change since 1938.	Elasticity.	% change in demand.
1. Income . . . . . $c = 0{\cdot}971$		0·05	1·003
2. Own price	0·706	−0·58	1·224
3. Related price : Imported beef	0·861	1·12	0·846
Home produced mutton . .	0·591	0·95	0·607
Cumulative effect of changes on demand			0·630
Change in supply since 1938			0·592
Current shortage			0·064

Appendix C

The following table gives the estimates of the various coefficients on which the calculations are based. The first four columns of coefficients (each followed by its standard error) are derived from the 1937–38 Ministry of Labour and the 1938–39 Civil Service Statistical and Research Bureau family budget surveys; the last two from time series for the period 1920–38, using first differences without trend. The social-class factors are not the same as shown in the commodity tables; they are given as estimated from the equation

$$\log y_i = a + b_{1i} \log E/n + b_{2i}\, s$$ [1]

where y_i is the expenditure on the ith commodity, b_{1i} is the total expenditure elasticity, E is total expenditure, n is the number of persons, b_{2i} is the social-class factor given below and s is a dummy variable which equals 0 for working-class and 1 for middle-class families. The coefficient in the commodity table is the anti-logarithm of b_{2i}.

The quality coefficient is b_{3i} in the equation

$$p_i = a' + b_{3i} \log E/n$$

where p_i is the average unit price (in pence per lb.) of the ith commodity and E/n is in £ per year. The quality elasticity is taken at $E/n = 100$, which is close to the average total expenditure per head in the population. The actual income elasticities used in the commodity tables are the difference of b_{1j} and b multiplied by 0·9 so that they refer to quantities rather than expenditures and to disposable income rather than total expenditure, the factor 0·9 being the estimated elasticity of total expenditure with respect to income.[2]

The own-price elasticities do not require any explanation; they have been included even when they were not statistically significant. The cross-price elasticities have been taken into account in all cases where their introduction reduced the residual variance of the regression variables; the commodity to which they refer is indicated in brackets, usually by its number in the table. In fact, a much larger number of possible substitutes and complements was considered in the regression analyses. The demand equation for margarine was found by analysing the regression of the quantity ratio between butter and margarine on their price ratio; hence the absence of one of the standard errors.

[1] Cf. "Family Budgets," Section 7. [2] *Ibid.*, 8.

Estimation source.	Family budgets.				Time series.	
Commodity.	Total expenditure elasticity.	Social-class factor.	Quality coefficient.	Quality elasticity.	Own price elasticity.	Related price elasticity.
1. Tea	0·49 (±0·03)	−0·40 (±0·04)	4·42 (±0·46)	0·068	−0·39 (±0·14)	0·21 (±0·13) (coffee)
2. Sugar	0·33 (±0·02)	−0·20 (±0·03)	0·26 (±0·04)	0·042	−0·43 (±0·15)	—
3. Butter	0·45 (±0·03)	−0·07 (±0·02)	0·57 (±0·21)	0·016	−0·48 (±0·17)	—
4. Margarine	−0·20 (±0·07)	−0·07 (±0·04)	1·32 (±0·21)	0·076	−0·75 (±0·33)	0·27 [3]
5. Cooking fats	0·26 (±0·02)	−0·24 (±0·04)	0·48 (±0·15)	0·025	−0·56 (±0·08)	—
6. Eggs	0·59 (±0·04)	−0·07 (±0·02)	0·28 (±0·04)	0·073	−0·46 (±0·15)	0·56 (±0·44) (total meat)
7. Bacon	0·64 (±0·04)	−0·44 (±0·05)	5·36 (±0·56)	0·126	−0·86 (±0·11)	1·59 (±0·44) (total meat)
8. Pork	0·54 (±0·05)	−0·39 (±0·11)	5·54 (±1·19)	0·137	−0·66 (±0·17)	0·82 (±0·47) [11 + 12]
9. Home-produced beef and veal	0·70 (±0·09)	−0·08 (±0·06)	5·95 (±0·91)	0·179	−0·41 (±0·16)	0·50 (±0·15) [12]
10. Imported beef and veal	−0·12 (±0·13)	−0·19 (±0·07)	5·53 (±0·88)	0·179	−0·32 (±0·52)	1·02 (±0·45) [9]
11. Home-produced mutton	1·03 (±0·10)	0·03 (±0·06)	3·34 (±1·25)	0·205	−1·67 (±0·42)	1·68 (±0·42) [9]
12. Imported mutton	0·24 (±0·15)	−0·01 (±0·09)	6·38 (±1·01)	0·186	−0·58 (±0·44)	1·13 (±0·42) [10] 0·96 (±0·52) [11]

OXFORD STUDIES IN THE PRICE MECHANISM

In its early days there appeared in *Oxford Economic Papers* a number of important articles dealing with aspects of the price-system. An invidious task of selection has been undertaken by Mr. T. Wilson (General Editor of *Oxford Economic Papers*) and Mr. P. W. S. Andrews (Honorary Secretary to the Editorial Board), editors of *Oxford Studies in the Price Mechanism*,[1] which also includes a number of hitherto unpublished essays and a general introduction by Mr. Wilson.

It is impossible to deal adequately, or even inadequately, with all contributions to a volume which covers such a wide range. Two chapters perhaps stand out as inviting a reviewer's comments. They both take their origin in the pre-war Oxford Economists' Research Group. The one is the famous Hall–Hitch exposition of the "'full-cost' principle"—"Price Theory and Business Behaviour," by Mr. R. L. Hall and Mr. C. J. Hitch, published in May 1939. The other is a new essay by Mr. Andrews, who was secretary of the Oxford Group, on "Industrial Analysis in Economics." Mr. Andrews has, of course, built extensively on the "full-cost" principle,[2] but in many important respects he deviates from the explanations provided by Mr. Hall and Mr. Hitch, and his essay is an interesting postscript to his book on *Manufacturing Business*.[3]

The Hall–Hitch "'full-cost' principle" has become heralded by some as a veritable Law of Economics. Mr. Andrews states, in the course of his own contribution to the *Oxford Studies*, that

[1] Oxford University Press. 1951. Pp. xv + 274. 21*s*. The first two numbers of *Oxford Economic Papers* were reviewed by Professor Austin Robinson (Economic Journal, September 1939, pp. 538–43). A large part of the present review is devoted to the same two articles on which Professor Robinson then concentrated, and many of Professor Robinson's criticisms, which have never been answered, are here repeated.

[2] It is a pity that Mr. Andrews has not made use of this opportunity of commenting on the criticisms of the original Hall–Hitch article by Professor Robinson, *loc. cit.*, and by Professor F. Machlup, "Marginal Analysis and Empirical Research," *American Economic Review*, September 1946 (reproduced in R. V. Clemence's *Readings in Economic Analysis*, Vol. 2).

[3] See Professor Austin Robinson's review article, Economic Journal, December 1950 (and his contribution to a discussion in the June 1951 number). I have tried to avoid undue duplication of Professor Robinson's comments, with which I find myself almost entirely in agreement. But some duplication has proved inevitable; and I have borrowed from Professor Robinson without specific reference to his article.

" realistic enquiries at Oxford had elucidated . . . that a general method of pricing was to add a margin as for net profit to average short-run costs " and that " business men appeared to adhere firmly to this method." In the light of such very categoric statements of the Hall–Hitch principle, it is refreshing and salutary to take advantage of the opportunity now presented of reconsidering the original Hall–Hitch article. The enunciation of the " principle " was much more tentative than the manifestos of its more recent upholders would suggest. It was directed as much to the relatively easy task of destroying the faith of anybody who really did believe that business men thought in terms of marginal cost and marginal revenue as to the more difficult task of providing a guide to business men's behaviour. " A large majority of entrepreneurs explained that they did not actually charge the 'full cost' price, a few admitting that they might charge more in periods of exceptionally high demand, and a greater number that they might charge less in periods of exceptionally depressed demand."

Mr. Hall and Mr. Hitch were " acutely conscious of the shortcomings of an enquiry of this kind." Of the entrepreneurs interviewed, after submission of a questionnaire, the evidence of only thirty-eight was considered—" far too small a sample to warrant any final conclusions." Of the thirty-eight, the behaviour of eight was " clearly not explicable in terms of full cost " (according to their statements price " might not be related to cost at all "; " what the market will bear is the only consideration "; " any price which will make some contribution to overheads is better than nothing "; and so on). The views of the remaining thirty entrepreneurs are tabulated. Strong deviationist tendencies are exhibited by at least seven of them (" the proper price is equal to full cost, but they cannot get this at present "; " full cost ought to be charged, but they could not get the business if they did "; " when trade is depressed competition makes it impossible as a rule to raise allocation per unit "; " in a weak market it is necessary to quote a price which will get the order "; 10% is added for profit " if possible "; allowance is made for a " reasonable profit "; " the margin added for profit is naturally smaller on competitive lines "; and " they produce at prices consumers want and reduce costs to make this possible)." Not all of the twenty-three which remain out of the original thirty-eight could be regarded, even on their own showing, as adhering " firmly " (Mr. Andrews's word) to the " full-cost " principle, and Mr. Hall and Mr. Hitch did not claim " rigid " adherence for more than twelve, of whom two (if not three) appear to be disqualified, as they

were members of price-fixing trade associations. This leaves ten (or nine) survivors.

Of these a high proportion appear to state that the average amount of overhead costs per unit of output, employed in calculating full cost, is worked out on the basis of actual or forecast output. We are, therefore, required to believe that these firms would raise their prices in a depression, relatively to wages and the prices of their raw materials. We may take this at its face value if we choose, but it cannot be generally typical of business behaviour. Even Mr. Andrews recognises that it would be "absurd" to suppose "the charging of a higher price in a falling market," and he takes refuge in a "budgeted" or "notional output" (perhaps "the last output achieved in relatively prosperous conditions") or an "average, taking the good years with the bad." [1] Mr. Andrews has told us that "it was the work of this Research Group that developed so strongly the conviction that the behaviour of the business men was consistent," [2] and he appears to forget that, according to Mr. Hall and Mr. Hitch, "somewhat more than half the firms used figures of actual or estimated output."

The one quite certain conclusion to which the Hall–Hitch article drives the reader is that far too elaborate a theoretical edifice has, in the twelve years which have elapsed since its publication, been built on a very slender factual basis.[3] The pioneer effort of the Oxford Economists' Research Group should by now have been taken much farther.[4]

The field is of outstanding importance, and justifies a critical approach. Those who are studying business men's behaviour in the matter of prices would do well to keep a number of fundamental questions in the forefront of their minds. The most important question, on which light is normally shed only by

[1] *Manufacturing Business*, pp. 164, 165. [2] *Ibid.*, p. xv.

[3] See also Professor Machlup's comments on the evidence of the thirty-eight entrepreneurs, *loc. cit.*, p. 545.

[4] Mr. D. C. Hague has made a start: "Economic Theory and Business Behaviour," *Review of Economic Studies*, 1949–50, No. 41. His general conclusion is (p. 154): "Profit maximisation by balancing cost against revenue was . . . carried out, but only on a long-term and unscientific basis. Short-run profit-maximisation is usually unacceptable in practice. . . . The main occupation of most entrepreneurs is keeping the margin between [average cost and average revenue] as wide as possible at any given level of output."

In his chapter on "Price and Production Policies" in *A Survey of Contemporary Economics* (1948, edited by Howard S. Ellis), Professor Joe S. Bain says: "Empirical research . . . has left open the possibility that flexible application of such formulæ may give results roughly equivalent to marginal calculations, and it has suggested many alternatives to straightforward 'full cost' pricing. The facts here, and their interpretation, are still largely to be discovered" (p. 155). Later in his chapter Professor Bain expresses doubt as to the value of "broad and superficial questionnaire investigations into pricing methods" (p. 165).

implication by workers in this field, is whether the business man is being revealed as a man who knows his job better than the economist or whether the upshot is that an individual business man could increase his profits if he employed on his staff graduates in economics (so long as his competitors did not do likewise).[1] A clearer view on this fundamental issue can reasonably be demanded (and, incidentally, it is vital if one is to assess the implications to the presumption in favour of *laisser-faire* of any failure of business men to understand how to maximise their profits). So long as the reason given for the business man's reluctance to alter his prices is his knowledge that if he cuts his price his competitors will be instigated to cut their prices too, whereas if he raises his price his competitors will simply take away most of his trade, it is compatible with the traditional hypothesis of profit maximisation, as modified by the theory of oligopoly. This was fully recognised by Mr. Hall and Mr. Hitch, who devoted considerable attention to the " kinked demand curve." But all that the kinked demand curve explains is why the price remains where it is (for no other reason than that it happens to be there) until something happens to cause it to alter. As Mr. Andrews complains, " the reason why the ' kink ' should occur at the full-cost . . . level of price was not adduced. If anything the determination of prices appeared even less rational than before." The important, and interesting, question is not why prices are not altered when they are not altered but *how much they are altered by* when they do alter. A general upheaval in the price structure takes place from time to time as a result of a breakdown of what elsewhere I have called the *first degree of collusion*,[2] on which depends the belief that a cut in price will be the actual cause of a firm's competitors cutting their prices too, so that probably all will be worse off. Apart from a severe fall in demand, when Mr. Hall and Mr. Hitch admit " usually one entrepreneur is overcome by panic : ' there is always one fool who cuts,' " it is usually a general change in costs which provides the signal that such a breakdown is about to occur. The statements of business men suggest *prima facie* that while each is usually sensible in not altering his price so long as the price structure in his industry remains rigid, he has something to learn about the principles on which, looking at it from his own individual point of view, he should adjust his prices on the occasion of one of these periodical *bouleversements* of the price structure. This

[1] See R. F. Harrod, " Price and Cost in Entrepreneurs' Policy," *Oxford Economic Papers*, May 1939, p. 2. This introduction by Mr. Harrod to the Hall-Hitch paper is not reprinted in the *Oxford Studies*.

[2] " The Problem of Duopoly," ECONOMIC JOURNAL, March 1937, p. 9.

Mr. Hall and Mr. Hitch seem to accept when they suggest in one passage "that maximum profits, if they result at all from the application of [the 'full-cost'] rule, do so as an accidental (or possibly evolutionary) by-product."

But if a considerable number of business men in the same industry all took advice on how to maximise their profits they would, at a time of sub-normal demand, all be worse off. The "full-cost" principle, in so far as it operates, acts as a self-defence mechanism, protecting business men against the disastrous effects on profits produced by the existence of surplus capacity in an industry which is fairly competitive and homogeneous. The second important question, therefore, to bear in mind in examining business men's behaviour is how far it is a matter of what I would call the *second degree of collusion*—of Professor Fellner's *esprit de corps*, which it would *pay* the individual to ignore but which "yet he does not violate because he places above individual advantage good standing in the group, or the interests of the group." [1] In the words of Mr. Hall and Mr. Hitch, a price is reached "by what was in effect an agreement, though an unconscious one, in which all the firms in the group, acting on the same principle of 'full cost,' sought independently to reach a similar result"—the outcome of "the community of outlook of business men." [2] Such community of outlook need not be confined to the group which is normally described as an "industry." When it takes the form of a moral principle, expressed in the idea of what Mr. Hall and Mr. Hitch call "the 'right' price, the one which 'ought' to be charged," it goes deeper and wider than community of outlook, and plays the canonical role of keeping prices down at times of scarcity as well as keeping them up at times of abundance. These are the considerations which Mr. Hall and Mr. Hitch were induced by their investigations to put in the forefront. The other factors—kinked demand curves and all that—were subsidiary. This is one of the points about the Hall–Hitch inquiry which appears to be overlooked by Mr. Andrews and others.

This leads us to the question on whose "full costs" an individual producer will base his prices. The replies given by business men usually suggest that they base their prices on their

[1] W. Fellner, *Competition among the Few*, p. 43.

[2] Mr. Harrod (*loc. cit.*, pp. 9, 10) asks himself the question "why do not the primary producers . . . fall victim to this morality?" and provides an answer supplied to him by Mr. Hitch: "in the case of the primary producers there is no unique rule available which is capable of elevation to moral status." I would add that it is a matter also of the *number* of competing producers, and not only of the output rather than the price being the subject of entrepreneurs' decision.

own costs rather than on those of somebody else—imaginary or real. On the whole, Mr. Hall and Mr. Hitch appear to accept this, but they refer to a common case in which the price is set by one strong firm at its own " full-cost " level, and it is then accepted by other firms in the " group." More generally, " where costs do not differ widely within an industry " " the nearest that we can get to an exact statement is that the price ruling . . . is likely to approximate to the full cost of the representative firm." The " principle " is getting pretty amorphous at this point. In Mr. Andrews's hands, despite the lip-service which he pays to it, it becomes yet more amorphous. A business will not raise its prices as a result " of a rise in its costs due to a decrease in the productive efficiency of the business." On the other hand, businesses " will reduce prices fairly promptly " as a result of improved efficiency—provided that they are " relatively stronger businesses " rather than " weak businesses which are only just holding on." It is high time that Mr. Andrews published the empirical studies which have led him to these opinions. While the kinked demand curve seems to lurk behind Mr. Andrews's analysis, he places a great deal of weight on " the experience of a business man in an established business " giving him " a fair idea of what level of price is likely to be dangerous " by attracting competition. In so far as the danger consists of the setting up of new businesses, or the diversion of existing businesses from the production of other commodities, one might imagine that the " principle "—which incidentally would then operate only in keeping prices down in a sellers' market and not in keeping them up in a buyers' market—would consist of charging not much more than the " full cost " of the potential competitor. Mr. Andrews tries to base a firm's price on its own costs. However, a firm's " gross profit that it can get will seem to be limited by the competition which is actually or potentially present in its market," which sounds like a roundabout way of saying that to the extent that the costs of a potential competitor are judged to be higher than a firm's own costs (normally the gap will surely be considerable), the firm will estimate the maximum price which it is safe to charge by reference to the potential competitor's " full cost " rather than its own. If, on the other hand, a business man regards his own efficiency as an indication of the efficiency of potential competitors, why should he bother about his costs at all in deciding how high a price it is safe to charge ? His *profits* will tell him all that he needs to know : good profits, on this theory, are the sign, *and the only necessary sign*, that prices are dangerously high, and average costs need not be calculated at all (they may be necessary to decide on

relative prices of different products, but that is another story, though, as Professor Robinson has pointed out, there is a "superficial similarity" [1]).

It would be wrong to infer that Mr. Andrews's conclusion boils down to the familiar case of imperfect competition with free entry. Nothing could be more different.[2] In terms of the jargon and the analysis of the school for which Mr. Andrews has no sympathy, the upshot of Mr. Andrews's analysis in this section of his treatment, although Mr. Andrews does not carry his argument to its logical conclusion, is that the demand curve for each individual firm is rendered so elastic by the *potentiality* of new entry into the industry that it is only in very exceptional cases that the price will be sufficiently high *actually* to attract new firms in. The number, and therefore the size, of the firms in an industry would then (and should according to Mr. Andrews but he does not say so) be a matter of historical accident, and so, therefore, would be the average cost of production, and hence the price of the product, in so far as these depend on the internal economies of large-scale production. This is the case in which, but for the fear of new entries, the price would be so high, and profits so attractive, as to increase the number of competing firms. In the opposite case, in which there is no question of new firms coming in, Mr. Andrews gives reasons why prices are not cut in such a way as to drive some of the existing firms out (with the result, which he does not state, that potential economies of large scale fail to be exploited and that *laisser-faire* fails to establish the maximum possible efficiency). Mr. Andrews explains how the development of his own ideas on this subject threw light on the meaning of Marshall's. He suggests that "we should presume Marshall's competitive analysis for manufacturing industry to imply identical prices for identical commodities, but not individual demands of infinitely large extent at those prices," and he stresses the idea that "personal contact and familiarity with conditions and requirements on both sides of the bargain will produce the individual business's 'share' of the market." Mr. Andrews is plaintive about "the inter-war rejection of Marshall." The reasons for his affinity with Marshall are clear, but in the course of a very interesting development of the case for Marshall, which is not perhaps helped by his decision to abandon the concept of the "representative firm," Mr. Andrews does not gloss over Marshall's unhappiness in dealing with internal economies: "at the back of his mind there was always the concept of an individual business taking all decisions and deciding

[1] Austin Robinson, *loc. cit.*, p. 776.

[2] See F. Machlup, *loc. cit.*, p. 538, note 24, and p. 544.

its whole position—in such a way as to maximise its profits. His ultimate refusal to persist with this view arose from difficulties which he encountered when trying to apply it to manufacturing industries."

One wishes that the Hall–Hitch article had included a specimen of the actual questionnaire presented to the victims of the inquiry. In its absence gnawing doubts as to possible tendentiousness in its presentation find easy prey.[1] But the fundamental doubt is whether these business men, and other business men in similar predicaments, did not feel called upon to devise, and present to the Oxford intellectuals, a theory of business behaviour which is primarily a rationalisation and, in considerable measure, a false rationalisation of behaviour based on instinct rather than reasoning.[2] It is with business men's behaviour, not with their thoughts, that we have to reckon. The economic *theory* of a business man may be based on the concept of a *fair price*, which is the price which, it is believed, in the absence of special circumstances, *ought* to rule. But very often this theory is a theory of ethics rather than of economics, and the business man takes the best price that he can get (though if this is higher than the fair price he may be reluctant to extort it to the full). This facility of the business mind to follow simultaneously two inconsistent lines is referred to by Mr. E. M. Forster in the following passage from *Howard's End* :

> "The breezy Wilcox manner, though genuine, lacked the clearness of vision that is imperative for truth. When Henry lived in Ducie Street, he remembered the mews; when he tried to let he forgot it; and if anyone had remarked that the mews must be either there or not, he would have felt annoyed, and afterwards have found some opportunity of stigmatizing the speaker as academic. So does my grocer stigmatize me when I complain of the quality of his sultanas, and he answers in one breath that they are the best sultanas, and how can I expect the best sultanas at that price? It is a flaw inherent in the business mind, and Margaret may do well to be tender to it, considering all that the business mind has done for England."

The conflict between what business men say and prevalent academic doctrine on price and output policy arises partly from the habit of expressing this doctrine in terms of a tendency for marginal revenue to be equated to marginal cost. Such phrases

[1] But Mr. Harrod assures us that "the members of the group had completely open minds as to what the result would be" (*loc. cit.*, p. 2).

[2] See F. Machlup, *loc. cit.*, p. 537.

mean nothing to the business man. But the essence of this doctrine does not lie in the use of marginal concepts.[1] It could be equally well, if less elegantly, expressed in terms of each individual firm maximising its profits. Put in that more homely form, the concept does readily lend itself to the operation of the forces of trial and error,[2] and to the display of *flair*—the success of which by no means depends upon the manner in which it is rationalised.

It seems clear enough that the "full-cost" principle does not operate rigorously, in the manner often attributed to it—though not by Mr. Hall and Mr. Hitch. It would be quite wrong to go to the opposite extreme and infer that, regarded as one of many factors, it does not operate at all. One cannot disregard altogether the views expressed by business men about their own behaviour. And many of them do in fact employ cost accountants to make the calculations which the "full-cost" principle demands, and the results of these calculations must clearly have some effect on their behaviour, even though their attitude towards their cost accountants is as healthy as that of Mr. Mark Spade, the author of *How to Run a Bassoon Factory*,[3] who asks the business man to "accept the fact that a thing which cost you seven and six in materials and labour was a dead loss when sold for twenty five pounds, gracefully. If you have that sort of accountant you will probably find that it all works out right in the end."

The actual behaviour of prices and profits—as revealed by comparisons of different firms and products and of different points of time—fails to support the "full-cost" principle in its undiluted form. But it fails equally to support, in its undiluted form, a narrow interpretation of the operation of the profit motive. Mr. Andrews is clearly right that in the upward direction prices are limited by the danger of attracting new competition into the industry, and not merely by such new competition after it has materialised, and this idea is perhaps as important as the idea that it is *esprit de corps* which limits price-cutting in the downward direction. Our understanding of these matters is likely to become greater when the forces determining prices are treated quite separately for buyers' markets and for sellers' markets.

The Oxford Economists' Research Group also investigated, by

[1] See F. Machlup, *loc. cit.*, pp. 537, 540; D. C. Hague, *loc. cit.*, p. 146.

[2] But see R. F. Harrod, *loc. cit.*, p. 5.

[3] Published in 1934: see especially Chapter X on "Time-Study and Costing." (This important work was republished in 1950 with *Business for Pleasure*, introduced by an incriminating foreword by Mr. Nigel Balchin.)

similar methods, the influence of the rate of interest on business men's behaviour, and in the *Studies* are now reprinted the original presentation of the Group's results by Professor Meade and Mr. Andrews, whose paper was first published in October 1938. The inquiry was again directed to a very small number of cases—thirty-seven in all—which were investigated by personal interview following on the submission of a questionnaire. In February 1940 Mr. Andrews published the results of a later inquiry conducted on a much wider, but necessarily more mechanical, basis, and his paper also is now reprinted. Sir Hubert Henderson's original introductory article is also now reprinted, with the conclusion that the majority of the business men denied "that their activities have been, or are likely to be, directly affected in any way by changes in interest rates."

Here again the Oxford economists are inclined to leave us to decide for ourselves whether the business men knew their own job or whether their conduct, at least as revealed by their answers, showed lack of rationality.[1] The Oxford Group were obviously surprised by the results of their inquiries. But ought they to have been surprised? Sir Hubert Henderson, at any rate, seems to think not, in view of the operation of wear and tear, obsolescence, and risk and uncertainty. He went on, by way of concession to the conventional view, to point out that "a very high proportion of our aggregate capital expenditure" probably consists of "durable consumers' goods" (especially houses) and "the assets of public bodies and public utilities," which, as he pointed out, is just where one would expect the rate of interest to be important. But the last word in that phase of the discussion was with Professor Sayers, who in his summing-up, published in February 1940 and also now reprinted, thought that "the potency of that weapon [the rate of interest] in a constantly changing world must . . . be described as very low." The editors have given Professor Sayers the opportunity of thinking again, and we now have a fresh appraisal, written early in 1949. Professor Sayers is now "inclined to the view that changes in the interest rate may have considerable effect on business activity through their effects on both capital outlay and consumption outlay." In a footnote he

[1] For a close examination it is desirable to refer to the details of individual cases which, running into many pages in the original articles (*Oxford Economic Papers*, October 1938, pp. 15–28, and February 1940, pp. 46–70), have been omitted from the reprinted versions. The omission of the following comment is particularly regrettable: "The business is conducted on a basis of sound common sense, and is free from idiotic word-spinning theorists whose intervention invariably leads to Carey Street. There is no need to treat the above information as strictly confidential" (*ibid.*, p. 48).

quotes Professor Meade, 'looking back after eleven years': "What seems to have been overlooked is the extent to which our interviews were confined to risky manufacturing or commercial business." Professor Sayers himself mentions that business men who in the thirties were pooh-poohing the significance of low interest rates had in the twenties been emphasising loudly the depressive effects of dear money. There are other reasons too—some more reputable than others—for viewing a change in the rate of interest under a different aspect according to whether it is expansion or restriction which the economy calls for. But topical allusions are not allowed by Professor Sayers to reach the surface (which is perhaps as well at a time when building is subject to a stringent direct control and the aim is to expand rather than contract the building of houses). His survey of the development of thought on this question is sedulously academic in tone and contains much interesting matter.

One of the surprising results of these inquiries is that most of the business men appeared to deny that the expansion of their businesses was in any way hampered by difficulties of finance. It is true that it was the rate of interest as such which dominated the inquiry. But the original thirty-seven were asked in the course of discussion about the effect of abundance or scarcity of liquid resources, and Mr. Andrews's later questionnaire made specific reference to "the facility with which you can raise new capital from the public." Less emphasis on the "rate of interest" (carrying with it a suggestion of bank loans, debentures and preference shares) and more on the terms on which ordinary shares could be issued would be helpful in future inquiries of this kind. How far do managements launch their new issues with a view to exploiting a favourable market position in the shares in their companies rather than to financing new investment which they want immediately to undertake? Any correlation which may exist between the expected return on the shares and a firm's investment in plant and buildings is likely to be pretty long-term in character, the timing of the execution of investment plans in any short period being then dependent, and only very slightly, on the yield earned on the firm's surplus liquid resources. The widening of the ambit of the inquiry in this way would lead on to the question whether the management have a sense of loyalty only to the existing shareholders or also to the potential shareholders who would take up a new issue if it was made, and might as a result be led to disappointment.

The same section of the *Studies* reproduces Professor A. J. Brown's pioneering and courageous attack on the statistical

relationship between the rate of interest and the demand for idle money. He regarded the latter as partly dependent on "the rate at which the general price-level has lately been changing," being "a measure of the expectations of appreciation or depreciation of money," but he failed to note that fixed-interest securities would be subject to the same expectations of appreciation or depreciation. Professor Brown's attempt to provide a basis for a correlation, without a direct causal relationship, between the rate of interest and "business enterprise" is open to Professor Sayers's objection that we have to "assume that somehow or other the idle funds can be pumped into the ownership of firms," but both here and elsewhere in the essay there is much to ponder over.

Professor Brown is responsible also for the whole of the section devoted to the Rate of Exchange. In April 1942 he published his important article on the conditions which must be fulfilled if there is to be exchange stability under a free system. This is reprinted, together with a new essay, in which Professor Brown provides a very useful appraisal of the work which has been done in recent years on the measurement of the fundamental elasticities of international demand and supply.

The remaining two chapters of the *Studies* open up fresh subjects, discussion of which would take us too far afield. Mr. B. D. Giles, in a hitherto unpublished essay, surveys the whole field of "Agriculture and the Price Mechanism." Dr. H. W. Robinson summarises the results, published at the time in various articles, of the work of another Oxford group (at the Institute of Statistics) which in the years 1936–39 made a statistical study of mobility of labour. In a new essay he deals also with "The Experience and Lessons of the Past Ten Years" on the response of labour to economic incentives. Writing at the end of 1949 (*i.e.*, before the policy of rearmament was adopted), Dr. Robinson felt that, thanks to other means of control over production, the Government's reluctance to make use of power of control over labour "had not had many far-reaching effects" on the distribution of manpower. But, even then, he was worried about the future, if the normal economic incentives were to remain inoperative. It is appropriate that the final page of these *Oxford Studies* should include a comment on "allergy to economic risk-taking" and refer to "the danger that stern realities will be overlooked or ignored on the grounds of humanitarianism," but give the reader no clear idea what Dr. Robinson wants to do about it.

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REVIEWS

The Dynamics of Business Cycles. By Jan Tinbergen and J. J. Polak. (University of Chicago Press, 1950. Pp. x + 366 $5.)

THIS English version of Professor Tinbergen's *Dynamics of Business Cycles*, first published in Holland in 1942, is an important addition to the corpus of English economic writings. Dr. Polak states in his preface that, "the American edition follows very closely the Dutch edition. In certain parts some historical material has been deleted, and Chapter XI" (*Periods of War and Inflation*) "and a few sections have been entirely re-written." About the English I will only make one observation. Autarchy is a seasoned English word of good literary lineage, and it means much the same as autocracy. The correct spelling of the word meaning self-sufficiency, which after some initial hesitation has been adopted in practice by most good authors, journals and newspapers, is autarky.

The style is clear, crisp and readable, and well reflects Dr. Tinbergen's lucidity, judgment and moderation. A number of the views set forth have already become known as Dr. Tinbergen's to most serious students; none the less, they will find it useful to have his doctrines brought together in a connected form.

The first section of this volume explains some of the concepts and tools most frequently used by econometricians with an admirable clarity that will bring joy and profit to non-mathematical economists who wish to keep abreast. Professor Tinbergen then devotes himself to a recapitulation of the bearing of what may be called traditional economic theories on business-cycle study, pp. 99–154; this synthesis is somewhat, but not, I should judge, radically, influenced by Keynes. (It is to be observed that about a third of this sector consists of the chapter that was "entirely re-written".) Dr. Tinbergen then proceeds to his own contribution to business-cycle theory, which is largely based on his econometric researches, but is set forth in language intelligible to the general economic reader. Finally, there is a very sensible and well-balanced discussion of economic policy.

A central part in Dr. Tinbergen's analysis is played by the proposition that the level of investment is a function of the level of profit in a preceding period. Empirical research has suggested that the model generated by this proposition constitutes a good

working hypothesis for trade-cycle study. The proposition will not be readily accepted either by theorists on the one hand or practical persons on the other. It may indeed be valid in a minority of cases. Some entrepreneurs, who have been straining at the leash to seize available opportunity, may increase investment in consequence of higher profit, simply because that profit gives them the finance to do what they had been unable to finance in any other way. Others may be wafted along into taking a more optimistic view of the future simply by the good cheer due to the accrual of higher profit. Most have more sophisticated and indeed better grounded reasons for increasing (or not increasing) investment expenditure. If economists incorporated in their systematic courses the doctrine that entrepreneurs regulated their investment plans mainly by reference to the level of current profit, it is to be feared that they would expose themselves to the criticism of practical persons. The fact that this hypothesis is conformable with the results of certain econometric researches would not be sufficient defence. It may be that the observed relation is due to the level of profit being itself very closely correlated with the true causes of investment decisions; but it may be that the observations have not yet given us sufficient evidence to assert the relation as a general proposition.

The rumour has gone around that econometric research has not been favourable to the " acceleration principle " as a cause of the business cycle. Dr. Tinbergen's criticisms of the validity of this doctrine are not very cogent; indeed, they are directed against a naïve version of it, which is in any case unacceptable. He holds—quite rightly—that it is unrealistic to assume " that entrepreneurs are able to estimate future production with such accuracy that they will always have either the capacity which corresponds with this production or a certain fixed percentage excess capacity. The principle implies perfect technical adjustment of new investment, according to very simple principles, to changes in the level of production, disregarding in particular the time period required for the production of the means of production " (pp. 104–5). This criticism implies that advocates of the acceleration principle as a cause of the cycle hold that the amount of investment undertaken from time to time conforms with that required by the acceleration principle. I should hold on the contrary that it is essential to the view that the acceleration principle is the cause of fluctuation that the amount of investment actually undertaken from time to time should *not* conform to its requirements. It is the failure of the amount of investment to

come up to the level required by the principle that gives the economy its upward propulsion, and conversely; it is the non-fulfilment of the requirements of the acceleration principle that is the dynamic element. If investment corresponded to requirements at each point on the cycle, there would be equilibrium at each point and no cause of further movement upwards or downwards. Those who hold the principle to be the most important cause of the cycle would by no means expect the acceleration principle to be exemplified in time series; such exemplification, if it occurred, would disprove, not prove, their theory.

Dr. Tinbergen correctly observes that on certain assumptions regarding the causes of fluctuation there may be no separate cause of the "turning point"; the turn may indeed be implicit in the causes generating the upward (or downward) movement. On the other hand, he would not deny that the causes of the movement may be such as to require a separate outside cause for the turning point. He uses language which suggests a preference for theories not requiring a separate explanation of the turning point. But is this perhaps simply a mathematician's æsthetic preference? "Many theories introduce such a change of data, often as a *deus ex machina*, at the appropriate moment; it is then, however, difficult to prove that the turning point is a necessary one." If the *deus* happens to be the arrival of full employment—or even increasing stickiness in the mobility of labour—it is not an altogether arbitrary one. It may even be possible to prove that this turning point is necessary!

These are only notes of caution, lest the provisional findings of econometricians harden into dogmas. But Dr. Tinbergen's exposition is by no means dogmatic in temper, and he has done most valuable service in giving such an excellent account of his methods and findings. His moderation and his fairness are wholly admirable.

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World Trade and Investment: The Economics of Interdependence. By DONALD BAILEY MARSH, with a Foreword by HOWARD S. ELLIS. (New York: Harcourt, Brace and Company, 1951. Pp. xxii + 594. $6.75.)

World Trade and Investment is a most welcome contribution in a field where there is a real need for an up-to-date text-book.

Professor Marsh starts with a brief empirical account of world trade, giving the student an outline of its volume and composition, and an indication of the key part played by the United States of America. The book also contains a review of post-war international organisations concerned with international trade and investment. The proof of such puddings is notoriously less in their paper recipes than in how they come out in practice, and this part is a little long. Nevertheless the student will find it a useful source of reference. But the central contribution of the book lies in the theoretical analysis (Chapters 6–21).

Professor Marsh embodies the Keynesian revolution into the theory of international trade. For the first time we have international monetary analysis and so-called value analysis presented together. The fusion is no easy task. Professor Marsh considers the effects of international income flows under three separate heads: the effect upon balance of payments, the effect upon national incomes and trade, and the effect upon allocation of resources. It does not seem that the main structure here is quite logical. The effect of an international income flow upon the allocation of resources between countries and industries is treated in a separate compartment from its effect on national income; yet the effects of changes in prices—which means *relative* values—have been analysed in the compartment concerned with national incomes. Clearly if (relative) prices are playing a role, they are doing so through allocation of resources. The author's practice of referring to the relationships which he analyses by shorthand expressions is perhaps unwise. In reading at length about "balance effect," "expansion effect," "allocation effect," "income effect," "price effect" (a term used for Mr. Hicks' substitution effect), "multiplier effect," it is well to ask oneself frequently "Effect of what upon what?" Every one of these terms is defined the first time it is used. Nevertheless it is not clear to me how the "expansion effect" (defined on p. 68 as "the effect of international investment upon economic activity, employment, and . . . trade") relates to "income effect" ("income effects occur when purchasing power flows from one country to another . . . thereby increasing . . . the amount of income"—p. 199). Are they the same thing?

Although one feels the need for some further clarification, this analysis of the effects of international income flows upon national incomes and trade is highly stimulating. In a short span Professor Marsh manages to get in a remarkable amount on the monetary or "aggregates" aspect of trade theory, starting with a

thorough examination of aggregate income accounting, going on to the foreign-exchange markets and the determinants of the balance of payments, and ending up with two chapters on the multiplier. But as Professor Marsh writes, there are "two main divisions of international economic analysis . . . (1) fiscal and monetary theory . . . and (2) the theory of prices and related problems of resource allocation in the national economy and in the world as a whole." It is his analysis of the second of these that leaves most to be desired. Less than 100 pages out of the 563 are given to this field; this is not enough. Chapters 19 and 20 give a clear exposition of the most useful geometric techniques for analysing the theory of international trade. They contain, moreover, a sprinkling of telling theoretical points not often clearly made in text-books—for example (p. 287) " in this as in all other cases, it is the difference in relative prices, not in relative costs as such, that leads to trade." Again (p. 273) " international demand . . . may itself determine what comparative cost conditions are, and it may cause trade to flow, under variable costs, even when there are identical cost schedules in each of the trading countries." And again (p. 87) " the distinction between international trade and trade within the domestic economy has in the past been associated with an essentially irrelevant distinction between theories of partial and general equilibrium." But unfortunately Chapters 19 and 20 also contain quite a sprinkling of misleading or even fallacious passages. The student might well be misled by the remarks on utility, for the description of the pictorial device of using indexed contour lines in place of a third dimension to depict utility ends up with the clause " and in the course of our analysis utility itself has disappeared with the third dimension " (p. 268). Nor is the matter improved by the remark (p. 312) that utility can be neglected because it can be " safely relegated as a constant of the third or the nth dimension."

A good illustration of the difficulty which the reviewer feels with these chapters is furnished by the following passage (p. 273):

> " Once we leave real costs in terms of absolute effort and sacrifice, and real income in terms of absolute satisfaction or utility, we are in the realms of opportunity costs on the one side and abstract preferences on the other. In other words we are in the realm of indifference curve analysis."

It does not seem to me that taking refuge in either of the two realms to which Professor Marsh here resorts can furnish the requisite explanation of value. The issue of opportunity cost versus real cost is a spurious one which disappears once the funda-

mental issues have been understood. The passage seems to confuse three distinct issues. When there are a number of different types of input effort, cost is a function of all of them (similarly satisfaction is a function of a plurality of consumer goods). This is distinct from the issue whether cost and/or utility can be measured in absolute terms or only ordinally (a question which remains even if there is only a single good produced and consumed). The conclusion that " in other words we are in the realm of indifference curve analysis " tends towards a confusion between fundamental economic relationships and expositional techniques. It is unfortunate that throughout the book the idea that satisfaction (or cost) is a function of several variables is referred to as " indifference curve analysis," whereas of course the curve is merely what you use if you represent such general economic relationships by means of two-dimensional geometry.

I am bound to say that I do not think that Professor Marsh has given a coherent analysis of the determination of prices and quantities in international markets. Some of the bricks are provided but they are nowhere built up into the main structure that the student needs. He must be told at what point and for what reasons the theory of international values branches off from the ordinary theory of the determination of prices and quantities, in commodity markets and factor markets, by the mechanism of equalisation of marginal productivities and marginal costs. The point at which the international analysis differs from the domestic is that the factors of production move less easily between the relevant points in the case of international exchange than in the case of domestic exchange. Professor Marsh has stated this admirably clearly himself (p. 93). If one stops to see what conclusions must follow from it, one is led to see that the compartment of value analysis which is relevant to international values is the study of the marginal productivity theory under conditions of fixed factor ratios. It is the fact that the factors of production in each country are fixed in the sense that they do not (easily) move from one country to another (even though within each country their supply may be to some extent elastic) that characterises international trade. Now the working of the marginal productivity theory under conditions of fixed factor ratios has been analysed already in the field of domestic value theory, for theorists have dealt with the case of production under *fixed technical coefficients*. In this case there can be no direct adjustment by movement of factors from a low-earnings point to a high-earnings point. The mechanism by which factor earnings are equalised,

and commodity prices and quantities are determined, when factor ratios are fixed, is that of *indirect* substitution—through the shifting of resources from one industry to another (the analysis is very clearly given by Lerner in his *Economics of Control*). In International Trade, quite similarly, no direct substitution by movement of factors from the low-earnings point to the high-earnings point can take place. Here again, *indirect* substitution occurs by the shifting of resources from one industry to another *within* each country. Hence, subject to the same restrictions and *by the same reasoning* as in the case of two or more industries with fixed technical coefficients, the earnings of the factors of production must be equalised between countries with fixed factor endowments. This is of course the conclusion which has been given to us by Professor Samuelson (" International Factor-Price Equalisation," ECONOMIC JOURNAL, June 1948 and June 1949). It cannot be an oversight that Professor Marsh does not refer at all to the recent literature on the equalisation of factor prices under conditions of uniform methods of production in each industry in all the trading countries. But it seems a grave omission. It leads to certain definitely distorted conclusions. Professor Marsh tells us that competition from cheap foreign labour is a bogy and that it will be possible for two countries to enjoy " the advantages of specialisation according to comparative not absolute difference " (p. 301). This passage seems to be supported rather by the author's staunch championship of *laissez-faire* than by rigorous logical reasoning. If technical production conditions are the same in different industries there is indeed a tendency for wages in the high-wage countries to fall (it is of course much more likely in practice that the methods of production in the different countries are *not* the same; but in this case the interpretation of the term " comparative costs " becomes dubious). This is simply an aspect of the gain to be derived from trade, the fall in high wages reflecting the reduced scarcity of especially scarce resources. But there is nevertheless a gain to the high-wage country in total. The same Government which brings in a commercial policy of free trade may bring in a budgetary policy which re-distributes national income in such a way as to increase the income of every group within the country including the wage-earners (if they happen to be the scarce factor).

An understanding of the fundamental theory of international values is only possible if the analysis proceeds with factors of production as explicit variables. Unfortunately Professor Marsh deprives himself at the outset of the necessary tools for this. He

introduces a diagram measuring two factors along the axes only to dismiss it: it is, he says, useful "in setting up a theory of factor prices," but adds that "it is not, however, of much direct use in the theory of international trade"! (p. 271).

In his treatment of the problems arising from the fact that trade is carried out under conditions of more or less severe restrictions and market imperfections (Chapter 21) Professor Marsh again seems to come to the verge of a fruitful approach and then to slip away down a blind alley. He states very clearly that (pp. 97–8) "the theory of international trade [is] the appropriate tool for analysing the pricing process . . . except in the purely competitive limiting case." This statement is not only true but important. All those matters connected with "imperfect competition" in which we are interested—pricing policy, price–cost relationships, efficient and inefficient allocation of resources—can only be solved for a closed system. International trade theory concerns (in principle) a closed system; both parties to the bargain are in the analysis. Partial equilibrium analysis deals with an open system, and for this reason discussions of problems of market imperfections in terms of supply and demand curves for a particular commodity are sterile. Professor Marsh seems to have failed to follow up these implications of his own remark, for he slips back to the old picture of supply and demand curves with the "monopoly output" at the intersection point of the two marginal curves. The whole discussion of efficient and inefficient allocation of resources, and of criteria of welfare for a group of people taken together (p. 333) is not helped at all by these diagrams. By contrast it is greatly illuminated by an Edgeworth contract curve for exchange between two parties. I would add that I am always hoping for a text-book which would link the discussion of tariff theory less closely with discussion of market imperfections and more closely with the theory of direct and indirect taxation. However, the chapter includes much that is useful to the student, especially on the geometrical representation of tariff problems.

Professor Marsh's book is most stimulating and is perhaps the best up-to-date text-book available to students of international trade. If I have dwelt mainly upon points where I have differed with the writer it is because the whole book is eminently worth while; it is precisely when something is good that one feels the urge to criticise it for not being better. The book will be invaluable to students in this field.

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Economic Man in Relation to his Natural Environment (2 vols.). By C. REINOLD NOYES. (New York: Columbia University Press (London: Geoffrey Cumberlege), 1948.) Pp. xiv + 1443. 82*s.* 6*d.*

Economic Man must be one of the most remarkable books ever to have been reviewed in the ECONOMIC JOURNAL. Few of the readers of this JOURNAL can have been taken so far afield from their customary hunting-grounds as the author of this review in his attempt to understand and appreciate Mr. Noyes's far-ranging treatise. It is an attempt which has occupied two years, the completion of which has required an unusual effort of will, for reasons which will soon be apparent to anyone who is persuaded by agreement or disagreement with this review to undertake the intellectual journey through the 1,400 pages of *Economic Man.*

No one should undertake the journey light-heartedly, equipped merely with the modest rucksack of the average economist's intellectual equipment and knowledge. It is certainly not a journey which should be undertaken by the Elders of the profession. In their case "The Action of the Cortex upon the Hypothalamus," to quote one of the section headings in the book, is likely to be fatal. They will perish early in the journey across the Matto Grosso of what an American reviewer has been inspired to call "Neurophysiological Economics." To be brought face to face with Economic Man in all his primæval complexity, completely isolated from the civilising (and complicating) influences of social life, would be too much for them at such a late stage in life. The Economic Man which Mr. Noyes portrays in such detail in the first two hundred and thirty pages of his book resembles a physiologist's nightmare interpreted by a psychiatrist to a neurologist. The humble and simple creature of classical economics, who trod with such unaffected modesty and simplicity in the pages of the masters, no more resembles economic man in Mr. Noyes's treatise than a child's bead-counter resembles an electronic brain.

The younger generation of economists who are sceptical of the naïve and simple character of their predecessors' Crusoe and who have not yet, from their readings in the related social sciences, built up a satisfactory theoretical alternative to *homo economicus*, might be tempted to embark upon the journey. They will require much in the way of equipment. In their rucksack they will have to pack a copy of the longer *Oxford Dictionary*. They will require for handy reference a fairly extensive library of major works on neurology, physiology and psychology. They will require a great

deal of time, and above all a degree of patience in dealing with verbal symbolism and abstractions which is exceptional even amongst economists. They will frequently be lost, sometimes for days at a time, in a thick jungle of concepts from which the light of reason appears, at times, to have been entirely excluded. They should therefore be equipped with a gyro-compass which is guaranteed to respond to the magnetic forces of reality and common sense. Above all, they must be extroverts who do not interpret Mr. Noyes's analysis in relation to themselves. If they do this there is a danger that, once having read the chapter on the power of " present wants " to generate behaviour in defiance of the cortex, they will abandon themselves to an orgy of intellectual self-gratification for which they will no longer feel any personal responsibility.

There are two further warnings which it is a reviewer's duty to proclaim. Few who undertake this journey, who do not turn back when they are caught in the first verbal swamp, and who do not become hysterical when they first meet Economic Man face to face, will regard the outside world in quite the same light as that in which they regarded it before they left. The second warning is this. They will be undertaking a major journey of intellectual exploration which will involve them in a considerable expense of effort. The reviewer does not consider that the length of the journey was justified by any major discoveries, but he must not on that account condemn the travel agency which arranged it. Others may well find economic man in his natural environment more congenial and interesting—polar exploration has its devotees, and economic science must pay high tribute to Mr. Noyes for having got there first.

It is impossible to give a conventional review of this book, to discuss briefly and succinctly the territory which it covers and its main arguments and conclusions, for, whatever else it may be, the book is quite unique. The territory it covers has never been covered before. It has certainly never been explored by anyone who regards himself as an economist. There is no one main theme, except that a science of man and of human behaviour must be built on much deeper and firmer foundations than those upon which modern economics has been built. The book succeeds in supporting this claim without making much of a contribution towards the new foundations—a comment which is made by the author himself. Its greatest value lies, paradoxically, in those sections in which the physiological and psychological mechanisms of response in the human being are described in all their bewildering complexity.

The contents list, which is almost complete enough to compensate for the lack of an index, gives the intending reader a good idea of the ground covered by the book. The first four chapters deal entirely with what Mr. Noyes defines as "present wants," or physical needs which demand immediate satiation if the biological equilibrium of the body known as "homeostasis" is to be preserved. The next two chapters deal with "future" wants and the way in which they influence present activity. The treatment of future wants is highly theoretical, and the reader is left, if he can follow the argument, in amazement at the intricate complexities of his mental processes. The most significant conclusion in these chapters is contained in the following statement. "We do not have economic and non-economic wants. We merely satisfy our wants in economic and non-economic ways." Mr. Noyes does not concern himself to any great extent with the non-economic ways of satisfying wants. His main concern is to demonstrate the complexity of the apparatus of response to the most fundamental type of want, and in this he certainly succeeds.

There follows in Chapters 7 and 8 a study of "Means and their Estimation" and "Subjective Valuation." In the former there are some involved discussions of the most elementary and obvious statements. In the latter there is a detailed exposition of the theories of subjective valuation which Mr. Noyes regards as "a problem that must be grappled with if we are to have a science at all." He considers that an adequate theory of subjective valuation is "the foundation upon which the whole science must rest—a foundation which is to economic behaviour what physics is to the behaviour of the Universe." He takes issue with all forms of marginal utility theory that depend on the assumption, which he has proved to be false, that the intensity of a want declines during the process of satisfaction. In the remainder of a lengthy, difficult and tedious chapter he endeavours to construct a satisfactory theory of choice and comparison. All this seems to be of academic interest compared with the fact that comparisons and choices are made and that the whole knowable and measurable superstructure of economic life rests quite firmly upon them.

The second part of the book begins with a study of "real costs" and "retaining" or saving. In these chapters, which, on a first reading, appear to contain nothing fundamentally new, the verbal morass deepens. It is difficult, for example, to conceive of so intangible a concept as "retention continuing to accumu-

late." As the book proceeds the terminology becomes ever more specialised and difficult to understand. The following is a superb example of economese :

> "The question of whether retaining will be initiated at all is, at any time, determined by the expectation of an occasion involving an instance of one or more future wants of sufficient force after deduction of the resistance offered by the intervening retaining required to compete for the last hour of working with the least current want included in the current day's programme."

Towards the end of the chapter the conclusion is drawn that the individual's allocation of effort between work to satisfy present wants and future wants depends on "an actuarial estimate of contingencies and an appraisal of the other types of occasion." This is a bit much to be asked to accept, however elaborate the reasoning before or after, unless we are also asked to believe that the mental processes of the average man are capable of unconscious *actuarial* appraisal. In an earlier footnote Mr. Noyes quoted with approval from Mr. Sweezy, who referred to "the economist who wants to be able to make general statements about the real world without first embarking on the laborious and often disappointing task of investigating its concrete properties." On many occasions in this book Mr. Noyes is hoist with his own petard.

A little further on Mr. Noyes claims that he has "separated the economic function, retaining, and its accomplishment, retention, from the physical objects retained." Can it possibly be claimed that this sentence has any meaning? There are a good many other statements which are little more than pure nonsense. On p. 686, for example, there occurs the following ponderous and superficially impressive conclusion. "A mass of different products cannot be summated and become an aggregate magnitude in either the objective or the subjective aspects" . . . except in terms of "real costs." There are innumerable aggregates, objective and subjective, which defy this conclusion, if, indeed, it has any meaning whatever. What of a 100 lb. of nails of different sizes regarded by the hardware merchant as "my stock of nails"?

The second volume deals with the "environment" in such an abstruse fashion that few will recognise it as the world in which they live. It attempts a synthesis of the arguments which does little to help the reader out of the daze in which he is left by volume one. Two hundred pages of even more involved verbalising lead up to the following conclusion (the italics are mine):

> "In fine, to put our generalisation in the most succinct form that seems possible, we *hazard the hypothesis*, though we *cannot prove it* that man's successive consideration of his wants remains always chiefly in terms of his order of priority —crudely stated, *how much he wants something*."

Does it really require a thousand pages of involved argument to reach this conclusion? Only the most hardened seekers after truth will pursue the book after this point. They will not miss much. The sections of this book which are interesting are the introduction, the summary on p. 232 and the conclusion. There are a number of interesting ideas in the remainder of the book, but their discovery is hardly worth the effort.

What is the significance of a book of this kind? It is the product of seventeen years' work. It is an attempt to synthesise work and ideas in various fields which are embraced in the term "the science of man" and to apply this knowledge to economics, a science whose many inadequacies have obviously stimulated the author to make the attempt. Though not, in itself, a great work, it may well come to be regarded as a landmark in the history of economic thought, for it is a book which makes a sincere attempt to dig down into the foundations of human behaviour, and all it succeeds in proving is that the results are not worth the effort. Economic man has laboured to bring forth an intellectual mouse. What are the reasons for this failure?

In his own promising introduction Mr. Noyes states his conviction that "before the social sciences, so-called, can be developed into true sciences, the apostles of the social sciences will need to have become disciples of the natural sciences." Yet Mr. Noyes has himself made the cardinal error avoided by the great practitioners of the natural sciences. The latter went to their laboratories and studied the facts. Their hypotheses were derived from the facts and tested against the facts. They measured and devised ever more perfect instruments of measurement.

The social scientist has a vast laboratory at his disposal, but his instruments of measurement and observation are crude in the extreme by comparison with those of the natural scientist. His raw material—man in an environment which is as much man-made as it is natural—does not lend itself to experiment, but it does lend itself to observation and measurement. The techniques of operational research are already yielding results out of all proportion to the effort involved, but these techniques are based on observation and measurement. Nine-tenths of the effort in operational research is devoted to measurement, one-tenth to

interpretation and the creation of new hypotheses. In economics the distribution of effort is almost exactly opposite to this. Nine-tenths of the effort is devoted to the production of works such as *Economic Man*. Hypotheses conflict, not with facts, which are difficult to measure, but with hypotheses, which are, in the social sciences, all too easy to create. The result is that when the social sciences are asked for solutions to human problems, problems which are arising with ever-increasing urgency in the industrial world, they provide, not a solution, but a "school of thought." And an ever-increasing volume of intellectual effort is absorbed into furthering the barren controversies which are encouraged by the profound ignorance of the facts existing on both sides.

In *Economic Man* an effort to change the direction of economic thinking has been made, but it is an effort in the wrong direction. Human motivation, however great its complexity, is a constant in most of the fundamental economic problems of the modern world. The study of that motivation is important, but it is not strictly the responsibility of the economist. The economist has a responsibility for the solution of the economic problems which arise, amongst other factors, because of that motivation. He should be cognisant of advances made in the study of human motivation, and in this respect *Economic Man* performs him a great service, but his responsibilities are much wider. There seems to be little doubt that the further advance of the social sciences will depend on the successful development and employment of the clinical and statistical methods of medicine and biology. If such methods were devised it would take a hundred years to test all the hypotheses in Mr. Noyes's remarkable volumes.

I. S. LLOYD

London.

Geschiedenis van het economisch denken. By L. J. ZIMMERMAN. (The Hague: Uitgeverij Albani, 1950. Second Edition. Pp. 276. fl.8.90.)

IN view of the fairly frequent appearance in recent years of "histories of economic thought," the spoiled reader naturally expects that a new entrant into the field will be marked by "something the others haven't got." Dr. Zimmerman's book, now in a revised second edition, amply satisfies this condition, for he artfully combines what is doubtless, up to a point, a history of economic thought with a guide to current economic thought and speculation. Indeed, it is probable that the more valuable parts

of the book are those where he is a guide to the present day, rather than an expositor of the "Forerunners."

His dominant thought throughout, made more explicit in the concluding chapter, is that economic doctrines are in a sense "natural" to the times in which they emerged, and reflect the conditions of these times. There are two observations, one in the Foreword and one near the end of the book, which throw light on Dr. Zimmerman's procedure. In the first he makes it clear that he is less concerned with the doctrines of particular economists than with the growth of economic schools. And to avoid the old reproach that errors of the past should be forgotten rather than made the subject of new study, he carries in each case the "schools of thought" down to their successors in the present day. The other observation (p. 233) is that in selecting his historical material, he has been moved by the consideration that those theories in any period are of interest which most closely approximate to the economic behaviour of that epoch. And he adds that it is of relatively little interest that in the full flowering of Mercantilism a pamphlet may have been published defending free trade; or that Malthus, in a period striving for free trade, may have been a protagonist of protection. And he adds, and it is at least significant of the point of view which he represents, that on deeper investigation it may be found that such figures, frequently viewed by the historian as unusually "forward-looking," were in fact guilty of an incorrect analysis of their times.

The consequence of Dr. Zimmerman's view as to what a history of economic thought should achieve is that he gives us a curiously synoptic picture of the doctrines of all ages. We may be hearing an exposition of the Mercantilists, but we end up with Keynes and Mr. Hicks; Bodin is not far removed from Irving Fisher; Ricardo brings in his train Henry George and Hertzka. A consideration of Utopian Socialism leads not merely to H. G. Wells, but to Aldous Huxley and George Orwell; just as the discussion of Scientific Socialism brings in, before it is finished, the names of Mises and Hayek. The treatment throughout is refreshingly linked up with the speculations of to-day and the day before yesterday; though on the other hand this procedure does incur the danger of producing a confused chronology in the mind of the beginner. Doubtless Adam Smith and J. E. Cairnes are both of the classical school, but they are of a somewhat different vintage.

In the later chapters where we are concerned with, for example, "the Anglo-American School"—"which is also called the

Cambridge School, after the University where Marshall taught "—with the theory, that is to say, of imperfect competition and of the trade cycle, history and chronology tend to fade out, and what the reader in fact gets is a competent and critical survey of comparatively current economic theory.

The last chapter of all (" History of Economy and Economic History ") has an interest of its own. In a way it is an enlargement, with illustrations, of what is Dr. Zimmerman's fundamental thesis—not in itself a highly original thesis to-day—that theory springs from the economic conditions of the time, and is explicable, and indeed almost inevitable in the light of these conditions. How, he asks, can the views of one time vary so fundamentally from the views of another? And he quotes, effectively enough, the views of Adolphe Blanqui and of Keynes on the Mercantilists. Dr. Zimmerman takes a number of fundamental view-points (Natural Law; Free Competition; Ricardian Rent; subjective theory of value, etc.) and relates them to their contemporary framework. The chapter has in it the makings of an admirable lecture at a summer school.

Altogether this is a very readable and, in its survey of recent and current economic speculation, a useful book; but references to Richard Owen may grate on the sensitive.

ALEXANDER GRAY

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The Idea of Usury: From Tribal Brotherhood to Universal Brotherhood. By BENJAMIN N. NELSON. (Princeton University Press, 1949. London: Geoffrey Cumberlege, 1950. Pp. xxi + 258. 20*s*.)

THIS is a clear and valuable summary of the opinions prevailing in Christendom on the subject of usury, from St. Ambrose in the fourth century till the time of Bentham.

Christianity never contemplated taking over all the precepts of the Pentateuch. But where they embodied moral principles which commanded general assent they could still be accepted as conveying divine authority. So long as the taking of usury was generally condemned, the texts forbidding it were placed on the same footing as the decalogue. And once the Church had recognised a precept as divine, it was not easy to depart from that position, when circumstances altered.

The leading biblical text on the subject of usury was the passage in Deuteronomy (xxiii, 19–20) which runs, " thou shalt

not lend upon usury to thy brother . . . unto a stranger thou mayest lend upon usury."

Up to the time of the Reformation the permission to lend upon usury to a stranger was usually regarded either as a special concession to the shortcomings of the Israelites, or as merely permitting the infliction of exactions on those who were potential enemies and whom it was permissible to injure. In so far as the general prohibition of usury was modified, it was by interpretations which excluded certain transactions (*lucrum cessans, damnum emergens*, etc.) from the definition of usury.

Luther started by accepting the traditional view of usury, but, when some of his followers displayed an excess of zeal on the subject, he inclined towards the attitude of Melanchthon, who contended that "the 'law of Christ' was not necessarily to be taken as the basis of the organisation of secular society. In the teaching of the Gospel temporal magistrates were entirely free to rule in accordance with civil laws" (p. 42).

It was Calvin who unequivocally discarded the prohibition. The text in Deuteronomy "had no other object in view 'except that mutual and brotherly affection should prevail amongst the Israelites.' The precept to lend without usury was plainly a part of the Jewish polity and not a universal 'spiritual law'," (pp. 75–6).

There were other texts condemning usury (Ezekiel xviii, 5–9, Psalms xv, 5) but "if we take recourse to the infallible norm of justice, we discover that usury does not conflict with the law of God in every case" (p. 77).

"Usury is not now unlawful, except in so far as it contravenes equity and brotherly union" (p. 79). It was a question of morality, not of law.

It was not till the eighteenth century that the attitude of the Roman Catholic Church became crystallised, and Mr. Nelson's story ends with a curious leading case, in which the Church frowned on a certain Father O'Callaghan, who wanted to put an extremist interpretation on its pronouncements.

Mr. Nelson's approach to his subject, though for the most part commendably objective, nevertheless recurs from time to time to a phrase which seems to embody a peculiar view of it. He conceives the abandonment of the prohibition of usury as a step from universal brotherhood to "universal otherhood." The prohibition, expressly applied to brothers, had been extended by Christendom to all people. When the prohibition broke down all men were thereby changed from "brothers" to strangers or "others."

If usury is assumed to be in itself a sin and to inflict an injury on the debtor, this is no doubt a justifiable description of the process. But if the payment of interest in business transactions is recognised not to be injurious, but to be beneficial to debtors as well as to creditors, there is no "otherhood" about it. About the iniquity of harsh exactions there is general agreement. And as to helping those in distress, the forgoing of interest on a loan is only one form of benevolence, and not of outstanding importance.

Apart from distress, there are duties of kinship and friendship, which preclude too calculating pecuniary relations, and which have survived the controversies about usury unimpaired.

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British Economic History Since 1760. By S. G. E. LYTHE. (London: Pitman, 1950. Pp. vii + 219. 15*s*.).

THE writer of a brief history undertakes an ambitious task; for while it is always hard to give a lucid and yet analytical picture of—as in this case—almost 200 years of economic development, it is far harder to do so when confined—as Mr. Lythe confines himself—to just over 200 pages. Broadly speaking, the writer of such a book may generalise or he may particularise: if he does the former, he is in danger of forcing upon the reader his own interpretation; if the latter, of confusing him with details and observations which, on so small a scale, are merely meaningless.

Mr. Lythe has sought to use his limited space for "introducing ideas and suggesting treatment" rather than for elaborating on particular movements, characters or problems. The result is an originality of approach which is sometimes refreshing, and a complete avoidance of the flabby, descriptive superficiality which is the curse of so many introductions to economic history. Unfortunately, the topics which the author has seen fit to omit are few and far between (although one of them, the gold standard, is a curious absentee), and the result is that the book, despite good use being made of telling quotations and statistical data, reads overfrequently like a lecturer's notes—notes which would require expansion and unification before conveying very much to an otherwise uninformed reader. Thus space is found for a very brief account (pp. 113–14) of the C.W.S. movement, of the jute industry (p. 37), of the social consequences of trade cycles (pp. 128–9) and so on. It then becomes inevitable that the more important

and more difficult questions are exceedingly cramped for space, and the author's mode of solving this difficulty, by offering two or more authoritative but irreconcilable or nearly irreconcilable opinions, is surely more likely to confuse than to enlighten the beginner. For example, in the page and a half covering the Bank Restriction period (pp. 166–7) there are very brief quotations from Silberling, Andreades, Ashton and Viner; whom is the reader to believe and on what evidence is he to form his own opinion? The treatment of the price fall from 1874–96 (pp. 120–1) contains one quotation from Keynes (quantity theory), one from Clapham ("special causes") and an allusion to Rostow's theories regarding the type and direction of investment. For the in any way advanced student this is certainly inadequate, and it must surely leave the beginner to "think and think and not know what to think." The chapter on "Prices and Economic Fluctuations" from which this last example is taken is a welcome innovation in an introductory volume, but, on inspection, turns out to be very disappointing. On the whole, Mr. Lythe appears to favour the view that "the wave-like undulations exhibit no marked periodicity or precise regularity of occurrence" (p. 126) and devotes most of his account (the whole is less than six pages long) to a glance at the effects of harvest variations and wars, with the remark that "realistic historical study must take account of the impact of these external forces" (*ibid.*). This really will not do. It is right that the economic historian should emphasise that no one cycle is just like another, and that something is always turning up to disturb the mechanistic perfection of a self-perpetuating cycle; it is wrong that he should ignore all the evidence that depressions are closely connected with secular processes of growth and capital investment and merely launch his reader on to an unchartable sea of perpetual economic accident.

The book is up to date, and the bibliographies at the end of each chapter unusually good. There are a few errors of fact. The British need for imported iron in the eighteenth century (p. 38) was met (especially after 1750) by Russian as well as by Scandinavian supplies; smallpox was not neglected until "the very end of the eighteenth century" (p. 149); direct assistance to shipping was maintained in the second half of the nineteenth century by the contract services (p. 77); and it is certainly surprising and perhaps misleading to see it so confidently stated (p. 149) that from 1750 to 1830 "the crude birth rate was remarkably high and steady"; according to the cautious Clapham, it "either remained fairly steady or, as some statisticians are

disposed to argue, rose slightly " (*Modern Britain*, Vol. I, p. 55). And it seems a pity to emasculate and misattribute Lupton's well-known saying (p. 137) " Enclosures make fat beasts, and lean poor people."

A. J. YOUNGSON BROWN

Cambridge.

Economic Resources and Policies of the South. By C. B. HOOVER and B. U. RATCHFORD. (New York: The Macmillan Company, 1951. Pp. xxvi + 464. $5.50.)

THIS book is written on two levels, a descriptive and an analytic, and achieves a high degree of competence on both. It seeks, first of all, to provide the reader with a reasonably complete picture of the economy of the South, and of changes in it since about 1929. This is excellently done, with a wealth of data extracted chiefly but by no means solely from the *Census of Manfactures, 1947*, and from reports of the Bureau of the Census; even those who think they know the South will find some novel information here. From this survey there clearly emerges the fact that the South as the authors define it—a selection of thirteen States each of which " is vitally concerned with the production of one or both of the two great staple cash crops of the region—cotton and tobacco "—is more and more merging its economic identity with the non-South through the process of the diversification of its economic interests. Thus in 1929 the percentages of total income payments in the South from agriculture and manufacturing were 20·2 per cent. and 12·6 per cent. respectively; in 1948 the figures were 16·5 per cent. and 15·1 per cent. Within agriculture, moreover, great changes had taken place, most conspicuously the fall in the percentage of farm cash receipts from cotton from 46 per cent. in 1929 to 27·2 per cent. in 1948, and the rise in " Cattle and Products " from 8·1 per cent. to 15·1 per cent.

Yet despite diversification and development, the South remains an area of relatively low income per head—still, in 1948, achieving only 64·4 per cent. of the non-South figure; and the bulk of the book is taken up with the attempt to answer the question, How can the South raise its *per capita* income nearer to non-South levels? which involves the preliminary question, Why is *per capita* income in the South so low? This clearly is a question of wide general interest, and the attempt to answer it for a region of the United States, with its wealth of statistical and other informa-

tion, should help in tackling the same problem in many other "backward areas."

The basic reason for poverty in the South is, of course, the high proportion of workers in activities (not solely agricultural) of low value productivity per worker. But when the authors seek to explain why such activities should be so widespread in the South, they seem more successful in disposing of popular but fallacious arguments (an unhealthy population, shortage of capital funds, disadvantageous freight rates, etc.) than of advancing adequate and convincing ones; indeed, the only reasons for "backwardness" which they do not demolish are lack of research facilities, lack of facilities for managerial training and the disadvantage of selling in competitive markets while buying at administered prices. To these might surely be added (on their own showing) lack of enterprise and initiative; this factor is mentioned as a difficulty on pp. 99, 102, 271 and 303.

The suggestions for raising income in the South are much more satisfactory, being both extensive and practical. There is an altogether excellent chapter on the use of forest resources, marred only by too brief consideration of the likely profitability of more careful forest management; and this is followed by three equally good chapters on agriculture, which contain an admirable appreciation of the problems raised by government price-support policies. (There is, incidentally, an illuminating little tale—pp. 348–51—as to how "support" is sometimes obtained.) The only criticism of these chapters is that the authors are perhaps too ready to accept unfortunate political influences on economic policy, and so do not point as clearly as they might to the need to impose extensive occupational adjustments in the interests of international trade stability and general American economic progress. The book, however, is concerned with the possible and not the ideal, and it certainly is almost impossible to ignore the fact that "an elaborate structure of artificial values . . . has been created and has become imbedded in land values" (p. 360) throughout the whole United States and not least in the South. The chapter on "Policies for Industrial Development" is also—once the idea of complete non-intervention by the Federal Government is accepted—very interesting from the practical point of view. There are, moreover, a few most pregnant pages later on (pp. 402–6) dealing with the problem of industrial location in relation to wage differentials, and this whole chapter on "Labour and Wage Policy" is one of the best in the book.

The basic assumption made by the authors in all their sugges-

tions for and estimates of future developments is of full employment in the United States. Only in connection with international trade (the important fact of the South's diminishing interest in this since the 1920s is well shown) is the danger brought out that full employment may be accompanied by prolonged inflation; the alternative difficulties raised by this are not set forth.

The aim of the authors in this book is a practical one. They have done an excellent piece of work, and it is a measure of the book's quality that it has much to interest others besides Southerners and specialists in American affairs.

A. J. YOUNGSON BROWN

Cambridge.

The Rural Economy of New England, A Regional Study. By JOHN DONALD BLACK. (Harvard University Press (London: Geoffrey Cumberlege), 1950. Pp. xxiv + 796. 48*s*.)

THE rural economy of New England has been a problem for Americans for almost a hundred years. More than any other region New England suffered from the characteristic competition of newly opened lands as the frontier of settlement moved westward and as railway transport brought the produce successively of the prairies, the Great Plains and the Pacific Coast to eastern seaboard markets. The migration of population from the stony uplands to the west or to the factory towns left abandoned farms and land which reverted to scrub and timber. Had it not been for the growing demand of populous urban areas for protective foods, the decline of rural life in New England would have been even more precipitate. As it was the downward trend continued almost uninterrupted from the 1870s or earlier until almost the present time.

There is reason to believe that this long movement is at last being reversed, and the publication of this exhaustive regional study by Professor Black and the Harvard School of Business Administration is therefore of great and timely interest. The work is a model of what such regional studies should be. It sets the central problem of land use in a broad socio-economic setting, beginning with the difficult problem of defining New England, treating its natural resources and analysing its historical evolution and the conditioning factors of industry, trade and transport. The body of the book is concerned with the main problems of New England agriculture and forestry, and there are separate chapters on the different types of farming. The problems

are clearly and simply dissected, with a wealth of statistics deftly introduced. For example, the author has gone behind the census figures to build up his own series; for the vagaries of successive census bases make the U.S. Census too blunt an instrument for the finer tolerances needed in an exact regional study of this kind. The result is a clear statistical picture of New England's past and present reinforced by a multitude of charts and tables.

The impression which emerges will confirm rather than surprise a shrewd New England farmer in his qualitative assessment of his own prospects. It is clear that the level of New England's rural economy depends on local rather than national demand. With certain exceptions, such as Maine potatoes, New England agriculture is geared to the demand of adjacent urban markets and especially the two great metropolitan areas of Boston and New York. That demand has increased markedly in the last ten years with the war-time expansion of New England industry which brought about the first net influx of migrant population for over a century. The accompanying rise in the standard of living has brought an even greater proportional increase in the demand for the protective and fresh foods in which New England farms specialise. How far this long-deferred recovery is likely to go the author is cautious about predicting, especially in view of the fact that it has received perhaps its greatest impulse from the exceptional conditions of war-time. But there seem grounds for believing that recovery goes further back, to the 1920s, and that New England agriculture has completed the big adjustment made necessary by the opening up of the West.

The author believes that if the present trends continue it should be possible, by more scientific farming and more thoroughgoing regional planning, to maintain New England's rural economy in a healthy condition. Although the soil is notoriously stony, after a liberal application of fertiliser it will produce more per acre than the naturally fertile soils of the Midwest and Great Plains and the greater cost will not offset the advantages of proximity to markets. A more intense use of machinery for all purposes from clearing stone walls for tractor-sized fields to dairying will make the small family farm—the social basis of New England rural life—into an efficient unit. The author is less immediately hopeful for improvement in the use of New England's vast area of woodland, which has deteriorated ever since the first stands of virgin timber were attacked by white men. But even

here much may be done by more far-seeing planting and when, as seems likely, the supplies of southern timber fail to keep pace with national demand, there may be hope for a revival of New England's lumbering industry.

Characteristic of the book's approach to the problem of the rural economy is its treatment of the growing use of land in New England for recreational purposes. Ever since the coming of the automobile and concrete highway the accessibility of New England from the metropolitan areas and its varied seaside and mountain scenery have made it a centre of holiday attraction. Summer homes, camps, tourist hotels and ski-ing resorts form the basis for a thriving industry which has become integral to the rural economy.

The picture which emerges of a complex economy based on a comparatively dense population and in which rural and urban activity are intimately connected bears more resemblances to the rural problems of the British Isles than would be the case elsewhere on the American continent. It is significant that the book closes with a plea for a much greater measure of regional planning than has hitherto been characteristic of the American political tradition.

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Hart and the Chinese Customs. By STANLEY F. WRIGHT. (Belfast: William Mullan and Son, 1950. Pp. xvi + 949. 45*s*.)

THE opening up of China by the West, which was so largely the work of Englishmen in pursuit of commercial gain, is in retrospect one of the decisive developments of the nineteenth century. China was reluctantly shaken from its dogmatic Confucian slumber, only to find itself no match for either the citizens or governments of modern nation-states. The latter usually came to the support of the former in their demands for concessions, and were only prevented from absorbing China *in toto* in the decades preceding the First World War by its indigestibility and their own internecine rivalry. To modern nationalists such as Dr. Sun Yat-sen no less than to the old mandarinate the existence of a foreign-dominated Customs Service, imposed by the unequal treaties, was a living symbol of the derogations of Chinese sovereignty endured at the hands of foreign powers,

great and small, not only because it involved the drastic curtailment of China's tariff autonomy but also because its major purpose was the collection of taxes which increasingly went to servicing foreign debts, a substantial proportion of which was incurred in liquidating indemnities, themselves the penalty of military defeat.

Because it touched China's international relations in the second half of the nineteenth century at so many points, and because it contributed not a little to the preservation of *l'ancien régime*, a systematic history of the Chinese Customs Service and of its central figure, Sir Robert Hart, is bound to be of interest and value to the student of modern China. Mr. Wright, who has already contributed to our knowledge of the Service of which he was formerly a Commissioner, has made scholarly and thorough use of the available Western sources and of the unpublished Customs archives, and specialists in nineteenth-century diplomatic history will be particularly grateful for the illuminating citations from Hart's correspondence with his London representative, Campbell. Perhaps it was inevitable that the treatment of Hart should reflect the traditional Chinese virtue of filial piety and that the book should be coloured by the point of view of the foreign employees of the Customs Service. But it is a pity that the author has found it necessary to devote so much space to covering what he himself confesses is the largely familiar ground of China's diplomatic relations. The reader must traverse almost a fifth of a voluminous text before he embarks on the life of Hart and the inception of the Maritime Customs Service in 1854. While some introductory background and the threads tying the expansion of the Customs Service and Hart's career to current diplomacy are indispensable, the balance of the book would probably have gained by a condensation of already familiar material on China's foreign relations and by a more detailed analysis of the internal political and economic impact of the Customs Service.

Hart was keenly aware not only of the place of the Customs Service but also of his own personal rôle in the history of his times. His life is a striking success story in the Victorian pattern. He was unquestionably a brilliant administrator and organiser and a master of the delicate problems involved in the tight-rope act of simultaneously advising the Chinese Government in its foreign relations, diplomatic as well as commercial, and acting as intermediary between China and the powers. He was loyal to the Manchu dynasty, whose employee he was, and to the

Empress Dowager, who pulled its political strings, which presumably explains how he managed to reconcile his far-sighted realisation of China's potential strength with a short-sighted faith in the stability of the existing order. Even after the Boxer uprising he asserted that the dynasty was far from effete, and in summing up his achievements on the eve of the Sino–Japanese War of 1894, he wrote to his closest confidante: "We have helped to keep China quiet and to keep the dynasty on its legs. I hope that is something." He might have added, "*Après moi le déluge*," for the dynasty which, as the *Dictionary of National Biography* rightly states, he did so much to save collapsed without a struggle a few weeks after his death.

S. ADLER

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Coal. By W. H. B. COURT. (London: H.M.S.O. and Longmans, Green, 1951. Pp. xii + 422. 21*s.*)

The British Coal Industry. By H. TOWNSHEND-ROSE. (London: Allen and Unwin, 1951. Pp. 162. 12*s.* 6*d.*)

PROFESSOR COURT'S volume on *Coal* is the first to appear in the General Series of the Official Civil History of the Second World War. It is, however, more than a narrative of war-time events; in the author's final words, "No other major British industry carried so many unsolved problems into the war; none brought more out," and the book is essentially a discussion of this theme.

The war-time history of the industry does not fall into well-contained compartments; most things were happening simultaneously. The treatment is largely chronological, on the ground of "the importance of looking at events in the order that they came along, if the action that was taken is to be understood" (p. 54). In an official history, based largely on official documents, it is to be expected that the centre of interest will be the development of policy; and criticism is disarmed by the suggestion that if chronology gives an impression of confusion, it but reproduces the actuality. Nevertheless, the exposition is thereby complicated, and in spite of some grouping of the main topics, and of frequent references backwards and forwards, it is at times difficult to follow the main themes.

In a brief review it is possible to notice only a few points from the wealth of material which is analysed. After a sketch of the industry between the wars, and an outline of the (belated and

inadequate) plans for war, Professor Court takes as his first period the eighteen months until the spring of 1941. Here the dominating feature was, of course, the fall of France, which for the coal industry meant the cessation of an inflated war-time demand which had been concentrated on particular districts; the effects were far-reaching and enduring. This period also saw the beginnings of problems which were to continue throughout the war and after, for example, those of transport (the severe winter of 1939–40 was accompanied by minor crisis) and distribution.

The first clear signs of what was to become the "coal problem" came in the spring of 1941, when it appeared that output would be less than the expected demands. Falling output, mainly caused by falling productivity, now began to dominate the picture. The statistics are analysed and the operative causes of the decline are discussed. Although Professor Court gets about as much from the figures as they can yield, the conclusions are uncertain. This question is still a baffling one, and one suspects that a later section on "The Mining Community" gets nearer the essentials than does the statistical analysis.

Uncertain diagnosis (even more uncertain in 1941 than now) meant uncertain policy. The main lines for the rest of the war were laid down in the White Paper of June 3, 1942, which coincided with the establishment of the Ministry of Fuel and Power. Professor Court characterises the policy adopted in 1942 as a "bundle of short-term expedients" (p. 288); it was inevitable that expediency should play a considerable part, but his complementary verdict is more justifiable, that "the more closely one examines the problems of the coal-fields the less likely it appears that any policy could have yielded good fruit within a short time." The policies of 1942 were, in fact, too long-term, and it is only now that some of them (for instance, concentration of production, increased mechanisation) are having effect. The various remedies which were proposed were tried, and found impracticable or inadequate; at best they may have reduced the rate of decline. In discussing mechanisation, Professor Court, like most writers, gives figures only of the *proportions* of the total output which was mechanically cut and conveyed; an increase between 1939 and 1945 of the proportion of the total output which was mechanically cut from 61 to 72 per cent. has rather different significance when it is realised that the absolute amount fell from 142 to 134 million tons (for mechanical conveying the figures are 58 and 71 per cent. and 134 and 131 million tons).

On the other side of the equation, there is a detailed discussion

of the control over supplies. In spite of some setbacks (such as the abortive schemes for domestic rationing) the old Mines Department and the new Ministry had considerable success in a difficult and complicated administrative task.

Problems of production and distribution cannot be divorced from costs and prices. The mechanism of the Coal Charges Account was evolved to deal with certain special problems, and Professor Court gives due attention to this important, but often neglected, matter, noting its inconsistency with some of the measures intended to increase output. As " industrial relations lay at the heart of success or failure in the coal production problem " (p. 220), wages assumed dominating importance, and the various negotiations and awards are discussed. Perhaps, however, there is undue emphasis on the expectations (official as well as public) that increased output would result from increased wages. It is true that there were ill-considered schemes for output and incentive bonus payments; but the tendency of the miner to prefer leisure instead of money, at any rate in the short period, has been a commonplace at least since it was discussed in the Report of the Select Committee of 1873. The total effect of wage-increases on output was, and is, obscure ; but in any case they were unavoidable on other grounds.

Although Professor Court is concerned mainly with the activities of government in its attempts to deal with intractable problems, he never forgets the advice, which he quotes, that coal " is not mined in Whitehall," and one can agree with his claim that further studies based on industrial records, while they may supplement and perhaps correct parts of his interpretation, are unlikely to transform the picture he presents. His study is an essential background to understanding of the present (and future) problems of the industry.

In such a large field some errors of detail are perhaps inevitable. Among those which the reviewer has noticed are the statement (p. 13) that the strike of 1926 lasted ten months (it lasted thirty-one weeks), references to the Lord President's " Council " (p. 92, footnote), a reference to the White Paper on *Price Stabilization and Financial* (*i.e.*, Industrial) *Policy* (p. 178, footnote). There are fairly numerous misprints; two important ones are : on p. 81, " 48 million tons " should be " 4·8 million tons ", and on p. 82, footnote, " more than 100 tons " should be " less than 100 tons."

In the first of a National Board Series, Mr. Townshend-Rose aims to give " a simple account of the way in which the British coal industry was nationalized, and of the new organization."

His book suffers from the handicap that its purpose is "to describe, not to criticize"; as an employee of the Board (he is a solicitor in the Legal Department) he considers that it would be "presumptous . . . to attempt to evaluate what has been achieved." In consequence, he does no more than present a convenient summary of accessible facts about certain features of the industry.

In matters which bear directly on the Board's activities, the effect of this approach is particularly inhibiting. The description of the new organisation (Chapter 3), for example, tells us no more of the working of the Board and its organs than could be learned from an organisation chart (though less clearly). Such crucial matters as the problems of combining central control with local autonomy are glossed over, even though there are some obvious contradictions in the description of the functions and powers of various parts of the organisation.

Even where the policy of the Board does not appear to be directly in question, however, the treatment is superficial. For example, on the difficult and far-reaching question of national *versus* district organisation, there is the bald statement that "Coal must be marketed in accordance with national policy, for it would not be in the interests of the industry, nor in the long run of the country generally for the coalfields to sell in uncontrolled competition with one another" (p. 58). Mr. Townshend-Rose does refer later (p. 96) to some of the thorny implications of a national wage-level, but perhaps this is because they were pointed out by the Board in its *Annual Report for 1948* and have thereby acquired official status. On so vital a matter as a new price structure, we are merely told that "the varying costs of production and transport are factors which have had to be taken into account" (p. 139).

Although it is convenient to have the facts brought together (for although they are all accessible, they are from scattered sources), it cannot be said that anything is added to our knowledge or understanding of the problems either of this industry in particular or of those of nationalisation in general.

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Empire and Communications. By H. A. Innis. (Oxford University Press, 1950. Pp. 230. 15*s.*)

This is a difficult book to review adequately. In a series of interesting but somewhat confusing accounts of successive "em-

pires," it ranges from Ancient Egypt to the Middle Ages in Europe, with incursions into Asia to add force to arguments. The use of the word "empire," however, is misleading; it is used to denote spheres of administration wider than that of the city-state and its immediate environs. The book is indeed about communications, but a more correct title for it would have been something like "thoughts on religion and writing in European history." The theme, in Professor Innis's words, is that "communication . . . occupies a crucial position in the organisation and administration of government and in turn of empires and of western civilization" (p. 3). "The effective government of large areas depends to a very important extent on the efficiency of communications" (p. 7). Some media of communications are particularly suitable for the development of organisations with continuity, usually religious organisations. The history of Europe, in this view, has been determined mainly by changing media of communications. Hence: "The monarchies of Egypt and Persia, the Roman Empire, and the city-states were essentially products of writing" (p. 12). "The limitations of words have led to resort to architecture and the rise of skyscrapers as an advertising medium" (p. 205). "The Second World War became to an important extent the result of a clash between the newspaper and the radio" (p. 209). Against such generalisations Professor Innis claims, however, that "it would be presumptuous to suggest that the written or printed word has determined the course of civilization!" Nevertheless, that is exactly what Professor Innis implies throughout his book.

One confusion arises from the author's varying use of the word "communication," which is used in at least four different ways to imply: (i) the script, (ii) the writing instrument, (iii) the writing medium and (iv) the language. On many occasions Professor Innis suggests that the writing medium is important; for instance, the change in Egypt from absolute monarchy, to oligarchy, to theocracy, is described as due to a change from stone to papyri. On other occasions, the language is important; for example, in Babylonia, according to Professor Innis, a flexible alphabet facilitated the crystallisation of language and favoured the development of cities rather than larger units of administration. On one occasion communications is used to describe roads and means of transport; in the section on Babylonia, reference is made to Darius's system of communications based on roads and the horse. Mostly, however, communications means writing and written records. In various senses Professor Innis attributes to

communications a strong causal influence in the rise and fall of "empires."

In so far as Professor Innis offers an interpretation of history, his thesis is unconvincing. Also, much of the book reads like notes on ancient and mediæval history from a variety of secondary sources. But the author makes many interesting remarks about the intricate relationship between language, literature, religion and politics. Professor Innis advances the theory that successive vernaculars (closely associated with commerce and effective administration) degenerated into dead languages (closely associated with religion, and an educated priestly class who interpreted it); the transition from the dead language to the vernacular was marked usually by literary activity of a high standard (as in Egypt, in Sumeria and again in Europe in the Middle Ages). To make the picture more complex, however, Professor Innis believes that certain writing media (for example, stone and parchment) favoured dead languages and "the conventionalization of writing, decentralization of cities, the growth of continuing organization in the temples, and religious control" (p. 33). Moreover, and here is the link with empire, "dominance of monopolies of knowledge in the centre of civilizations implied limitations on the fringes" (p. 49). Thus Professor Innis is able to contrast the histories of Egypt and Babylonia (where the priests interpreted the classics) with Assyria and Persia (where simplified writing formed the basis of new developments in communication and political organisation). The power of religions based on monopolies of complex systems of writing implied emphasis on continuity and time; while the vernacular facilitated the growth of political organisations with an emphasis on space. "The tendency of each medium of communication [is] to create monopolies of knowledge to the point that the human spirit breaks through at new levels of society and on the outer fringes" (p. 141).

Professor Innis's theory of the paramount importance of communications in the development of empires, however, is no more plausible than the converse theory: that the growth of empire causes necessary changes in communications. It is rather like the old controversy about religion and capitalism. Surely there is interaction; in part, they produce each other; in part, both are the result of other factors. And could Professor Innis's theory be applied to the rise and decline of empires that he does not discuss? To the histories of the French, Spanish and Dutch empires, or, more recently, to the British empire? I

doubt it. It would be interesting to see an historian of the ancient world review this book, carefully examining the historical facts on which Professor Innis bases his theories.

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National Transportation Policy. By CHARLES L. DEARING and WILFRED OWEN. (Washington D.C.: The Brookings Institution, 1949. Pp. xiv + 459. $4.00.)

THIS is a readable and well-documented work. The style and use of language strike hardly upon the ear, but with no more force than to serve as a reminder, useful when discussing trans-Atlantic problems, that the President's American is vastly different from the King's English. The reader on this side of the Atlantic may also find that the authors have assumed a greater knowledge of the recent history of the United States than he, in fact, possesses. A good deal, for example, of the discussion of the organisation of American railroads will be clear only to those who know more about attempts at consolidation under the authority of the Transportation Act, 1920, than the authors have told us. But these are minor criticisms. The authors and the Brookings Institute are to be congratulated on producing a book in which those interested in transport policy and in economic organisation will find so much to occupy their attention. The scope is wide. There are considered, in detail, federal assistance to the building of roads, construction of airports, aids to navigation and the airmail payments, subsidies to merchant shipping, improvements to inland waterways, etc., etc. Thirty billions of public money have been spent during the last three decades on roads, airports and waterways. This fact alone should be a corrective to the view that government in the United States keeps its fingers out of business pies.

The authors turn next to the powers conferred upon the bodies set up by Congress to regulate the commercial and economic activities of carriers. The manner in which these powers have been exercised is examined, and their economic effects upon the carriers and the public are assessed. This section is illustrated by copious references to and quotations from official documents—hearings before Congressional committees; decisions and reports of cases before United States Courts, the Inter-State Commerce Commission, the Civil Aeronautics Board and so on; reports from the Federal Co-ordinator of Transport and the many other committees, official and otherwise, large and

small, set up during the past thirty years by Congress, the President and other interested bodies to inquire into the condition of transport in the United States of America. The wealth of material thus displayed should turn the British student green with envy. The Inter-State Commerce Commission, for example, publish both their findings on any issue before them and a review of the evidence which led them to their decisions; and first-rate pieces of economic research these reports are too. One could wish that bodies similarly placed in Great Britain would learn to follow so excellent an example.

The inquiry arises out of a sense of profound dissatisfaction with the state of public policy towards transport in the United States and a conviction, new in American economic literature, that the needs of defence and national security are not receiving the attention they demand. The authors draw up a formidable indictment. "Expenditures for the provision of transportation facilities are authorised with no consideration for overall transportation requirements or the relationships among transport agencies. The result has been an improvident use of public funds and a failure to program in accordance with priority of need. The use of general taxes rather than user charges to finance these facilities has resulted in an uneconomic distribution of traffic, and consequently a misapplication of productive resources. In addition, failure to consider the problems and possibilities of the railroad system in conjunction with the planning of public transportation facilities has prevented the realisation of maximum benefits and maximum economy." The executive functions of providing for those transport facilities which under the Constitution come within the competence of government, federal, state or local, have not been clearly distinguished from the judicial functions of securing equity between the carriers and the public and between the carriers themselves. The Inter-State Commerce Commission have taken too much upon themselves, assuming, on occasion, some of the duties which belong more properly to (railway) managers. The Congress, responsible for the direction of policy, has failed to consider the transport industry as an organic whole, and the instructions issued in the several acts to the I.C.C. and other regulatory bodies have not always been consistent. "Manifestly," say the authors, with commendable restraint, "no regulatory agency can be expected to administer with uniform impartiality and integrity, congressional policies which are inherently contradictory and irreconcilable."

The argument is illustrated with a wealth of cases. The attempt, for example, to check the railway monopoly by expenditures designed to promote cheap water competition has brought the absurd result that railways must now be required to offer concessions in rates to encourage the use of rail–water routes in preference to all-rail routes in order to keep the inland water carriers in business. Contrary to intention, the new and expanding business of the domestic air lines has undergone just that " uneconomic " and " wasteful " expansion which it was the purpose of the C.A.B. and C.A.A. to prevent. The United States Merchant Marine and the air lines, encouraged by direct subsidy and by the airmail payments, compete with each other along the traffic lanes of the world at the cost of the United States taxpayer and to the obvious detriment of sea and air carriers under other flags. (One reader, being reminded of all this, warmed with sympathy for Cunard and the British Mercantile Marine).

The mass of evidence is overwhelming. The room for improvement in the future can hardly be disputed. Nevertheless, one may doubt the extent of the real damage which is being done to the present by the mistakes of the past. The over-investment of capital, for example, in the production of this or that group of facilities by one generation is bequeathed to the next in the shape of a mass of useful equipment. It is an inheritance of solid worth, even though the marginal return (if indeed that quantity can be measured) is less than was expected. No great loss falls upon the investing generation unless it can be shown that the resources consumed were diverted from other and more productive employment. In the cases under review, the output consumed in the nineteen thirties by that improvident expenditure of public funds would probably not have been produced at all had government refrained in the interests of economy and a proper allocation of resources from the building of highways, the improvement of waterways and the construction of airports and aids to navigation. That the growth of travel and traffic by road has been greatly assisted by government expenditure on highways is not a proposition which many would care to deny. This has pressed hard on railway stockholders no doubt. But the adequacy of the transport service has so far been protected by the fact that railways in the twenties embarked on schemes of capital investment so ambitious that they were subsequently enabled to carry an immense burden of traffic during the war. The risk of real damage again lies in the future. Road competition and rising costs, allied to uniformity of charge and the rigid

prohibition imposed by the Inter-State Commerce Act against discrimination in railway rates, has so reduced railway revenues, that railways, in the United States as in the United Kingdom, can no longer put by in years of booming traffic the reserves required to offset the deficits of the bad and to provide for development. The authors, contemplating this unhappy spectacle, arrive at the arresting conclusion that unless some freedom of manœuvre is restored to railway managements, the railways of the United States may have to be nationalised by default.

The defects of policy and organisation are summarised and remedies suggested in the last two chapters. (Chapter 16 in particular can be strongly recommended to British disputants. Both sides will find, ready to lift out of the context, telling phrases strongly reinforcing their prejudices about state and private ownership!) A federal Department of Transportation under authority of a Secretary of Cabinet rank is proposed. In his hands should be vested as large a measure of responsibility for the provision of transport facilities by all agencies as the Constitution allows. The duty of regulating carriers by rail, road, pipe-line, water and air should be separated and entrusted to a Transport Regulatory Commission. The British equivalent to the first would be a Ministry of Transport enlarged to accommodate the Ministry of Civil Aviation, the Elder Brethren of Trinity House and a control over merchant shipbuilding similar to that exercised in war by the Admiralty. The Transport Tribunal, established by the Transport Act, 1947, has already succeeded to the jurisdiction of the Railway and Canal Commission, the Railway Rates Tribunal, the Road and Traffic Appeal Tribunal and, in railway cases, of the High Court. There would have to be added to complete the parallel, the powers of the Traffic Commissioners and the licensing authorities under the Acts of 1930 and 1933 and of the Minister on appeal from the former in bus and coach cases.

British readers will not be surprised to learn that the authors, being American, are anxious to take full advantage of the contribution which private enterprise has to make. The transport policy they have to recommend rests upon the orthodox economic principles that "rates must reflect the true economic cost of performing transportation service" and that the user and not the tax-payers should pay for the installation and operation of the plant. Some economists might object to the vagueness of the phrase "true economic cost," and others might find grounds

in social policy for a degree of discrimination in favour of certain classes of transport users. But most I imagine would agree that the means must be found of satisfying these conditions if private ownership and private enterprise are to be retained. Principles are put into practice by organisations, and organisations, however well suited their purposes, do not, as we are beginning to find to our cost in Great Britain, by themselves ensure the execution of economic policies designed to bring about the desired ends. Organisations are driven by men. The men must have the capacity to interpret the aims of policy in their administrative decisions and the will to make those decisions effective. The authors of this book have not lacked courage in arriving at their conclusions. Should their recommendations be accepted, it is to be hoped that the public will be as well served by the men upon whom may fall the duty of administering this machinery. The tasks assigned to the Department of Transportation and the Transport Regulatory Commission would be forbidding in any country. Given the great size of the United States, they assume a magnitude which will make a heavy call upon the ablest men the United States can provide. There is danger certainly that the organisations may have been devised on so large a scale that ordinary men cannot transact the business with efficiency and dispatch.

There are three useful appendices, one statistical, the other two briefly outlining the scope of certain federal agencies and summarising previous proposals for the reorganisation of federal activity in transport. The index is adequate but only just. So full a work deserves a better guide to the detail of its contents.

GILBERT WALKER

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Deterioration in the Quality of Foreign Bonds Issued in the United States 1920–30. By ILSE MINTZ. (New York: National Bureau of Economic Research, 1951. Pp. xi + 100. $2.00.)

IT has become taken almost for granted that the defaults on foreign loans in 1931–34 arose from transfer problems during the Depression, and such an emphasis upon the time of default has diverted attention from the circumstances at the time of issue. This suggested the need for a study of foreign bond issues during the first great period of American lending, and the result is a workman-like and on the whole convincing analysis, which makes out a good case for saying that the quality of such issues deteriorated progressively during 1920–30.

The deterioration finds expression in the rising tendency of a default index, showing the percentage of the amounts floated in each quarter represented by those issues on which by the end of 1937 contractual obligations had not been met in full. While it might seem unduly severe to put partly and completely defaulted securities on the same footing, Mrs. Mintz is probably right to have reviewed the question of partial default separately, even if only as a check upon the main conclusion. Care, in fact, has been taken to submit the inferences drawn from the index to adequate tests, such as excluding Canadian issues, examining market values as an indication of degree of default, comparing the situation in 1949 with that in 1937, or using the number of issues instead of their amount. Perhaps the most stimulating section of the book is the introductory survey, in which the volume of foreign loans in the eleven years is shown to have closely corresponded directly with major and inversely with minor business cycles in the United States. The tentative explanation is that domestic equities and the higher-yielding foreign bonds appeal to the same class of investor, who then tend to prefer common stocks when the economic situation at home is improving, and foreign bonds when domestic business is contracting.

Quite apart from the decline in quality due to the switch in 1925–29 from borrowing by debtors, such as Canada and Western Europe, to loans to Latin America and Eastern Europe, it is shown that in the late twenties a greater proportion of bonds were placed through banking houses, which in the event seem to have been less careful or less skilful than the best institutions. Investors equally became too confident, and the risk premium (the yield differential between actual issues and riskless bonds of like maturity) sometimes fell when it ought to have been expanding. Finally, in interpreting the decreasing quality of foreign bonds, comparison is made between the first and the second half of the eleven-year period, and characteristics are found which are typical of the change from a buyers' or lenders' to a sellers' or borrowers' market. Instead of borrowers approaching American bankers, who in turn had to overcome the resistance of the public to foreign lending, some bankers' agents not only tried to negotiate given loans but also used high-pressure salesmanship to find borrowers. Mrs. Mintz finds, however, it is not true that bankers failed to inform themselves upon foreign countries; it was rather that the conclusions drawn were over-optimistic.

So wide is the problem that it is scarcely surprising if

Mrs. Mintz's general interpretation carries less conviction than her statistical presentation of the facts or her clear and cautious analysis of each type of evidence. The main omission is that the views of defaulting governments are not mentioned, and debt settlements are too sketchily treated. Was it the volume of loans or the proportionate weight of the annual debt service that seemed excessive? And was the value that borrowers received in relation to the nominal amount of debt incurred of any relevance? But even if such questions are excluded from her book, Mrs. Mintz is to be complimented on having refused to accept uncritically prevailing opinions on defaulted loans, and on successfully proving her main contention in a difficult field which at first sight looks so disordered.

M. S. RIX

London.

Industrial Conciliation and Arbitration in Great Britain. By IAN G. SHARP. (London: Allen and Unwin, 1950. Pp. 466. 25*s*.)

THE merits of this book are those of painstaking research into the history and practice of methods of negotiation in selected industries up to 1939 and of state action for aiding and supplementing such methods. Its faults are mainly those of confusion resulting from revision and additions to bring the story up to 1949. Its scope is rather wider than the title suggests, for it deals with collective bargaining as well as with the subsequent stages of outside intervention by way of conciliation (or mediation as the Americans would call it) and of arbitration.

In the industries selected—coal-mining, iron and steel, engineering and shipbuilding, cotton, building, boot and shoe manufacturing, railways—a great deal of material has been read, sifted and summarised. The development of negotiating machinery is traced for each of them over a period of about 100 years. The author tends at times to overstress unimportant details which have emerged from his research. Such facts as, for example, the exact numerical representation on some district board of conciliation in the coal-mining industry in the latter part of last century appear to have little significance in evaluating its measure of success or the forces which led to the development of later forms of negotiation.

The reasons for the diversity and lack of co-ordination between the methods of negotiation which the major industries have developed clearly emerge, however, from this study. The reasons

why such diversity has persisted, despite unifying influences, are on the other hand not examined in any detail. Indeed, the hesitancy of the author to draw conclusions from his research is to be regretted, for in the eleven pages which he devotes to that purpose he touches on, but does not develop, some interesting ideas. One would, for instance, have wished to learn more of the the reasons, based on his research, for his belief that voluntary submission to arbitration of disputes which the parties themselves are unable to resolve will outlive the compulsory system introduced during the late war. Times of high employment have in the past tended to be also times of disturbed industrial relations. Does the post-war reversal of that experience herald a new era in which the strike will be outmoded? It may be that experience of the operation of the new Industrial Disputes Order will answer that question, for its successful operation will certainly depend on voluntary submission of unresolved disputes to the Industrial Disputes Tribunal and on voluntary acceptance of its awards rather than on the compulsory provisions which the Order retains.

The method which the author has adopted of bringing up to date a book of which the greater part was written in 1939–40 is far from satisfactory. It appears to comprise a somewhat perfunctory revision of the original text, a section for each of the industries covering developments from 1939 to 1947, a chapter concerning state action arising out of the Second World War and an addendum relating to the principal changes effected in the years 1948 and 1949. Such a method need not have involved inaccuracy such as the statement that the National Production Advisory Council consists of representatives of the Trades Union Congress and the British Employers' Confederation. But almost inevitably it involves confusion as to whether certain statements are to be taken as representing the position in 1939, in 1947 or in 1949. It is not really satisfactory, for example, to find in a book published in 1950 the expression "pre-war" used apparently with reference to a period before 1914; nor to find a statement that the Amalgamated Engineering Union is not a member of the Confederation of Shipbuilding and Engineering Unions, even though the contrary may be implied in later passages. Nor does it make for clarity to imply in one passage that wages and working conditions in the retail distributive trades are regulated by Joint Industrial Councils, even though it is shown in a later passage that these functions were in 1947 about to be transferred to Wages Councils.

It appears possible that some of the difficulties of revision may

have been the result of the author's absence from this country, as it seems that since the original work was written he has returned to Australia. If this is so, it may also account for the reliance which in certain cases he has placed in this part of his book on secondary sources.

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A National Policy for the Oil Industry. By EUGENE V. ROSTOW. (New Haven: Yale University Press (London: Geoffrey Cumberlege), 1948. Pp. xvi + 173. 14*s.*)

Dollar Shortage and Oil Surplus in 1949–1950. By HORST MENDERSHAUSEN. (Princeton University Press, 1950. Pp. 34.)

Wells of Power. By OLAF CAROE. (London: Macmillan, 1951. Pp. xx + 240. 15*s.*)

OIL problems have so exercised public opinion on both sides of the Atlantic within the past two years that the significant part oil plays in the U.S. and the U.K. economies is fully realised: in the former as a major domestic industry and in the latter as the principal deficit element in its dollar balance of payments. Moreover, Anglo-American oil developments are of world-wide significance, since the international trade in oil is almost entirely in the hands of British and American companies, responsible for nearly 90% of the world's output until the Persian dispute. Until now, while the study of the economies of oil has been taken up intensively in America, little work has been done in Britain—save by officials in the course of Government business. It is not therefore surprising that of three recent publications in this field two should be by American economists and the other by a retired British Civil Servant. They approach oil from very different standpoints. Professor Rostow offers his study on monopolistic competition in the oil industry in general for the consideration of the welfare economist, the student of the trade cycle and the sociologist, and in particular as a determined call for action by anti-trust legislators. Dr. Mendershausen presents a clarifying memorandum upon the complex causes and effects of the dollar oil problems which beset Anglo-American relations in 1950, and Sir Olaf Caroe reflects a life-time of administration in what he calls "South Western Asia" in his leisurely survey of oil against the Middle Eastern background.

Professor Rostow's book may well be judged not only the most

valuable study of the economics of the oil industry yet published, but also a significant contribution to the application of economic theory to the practical study of business structure. The legal audience, to whom he (as Professor of Law at Yale) primarily addresses himself, must be impressed by his argument that anti-trust cases which failed or would have failed under Section 1 of the Sherman Act of 1890 (viz., restraint of trade) would be successful under Section 2 (viz., monopoly by size). Economists will find much to interest them in his analysis (as a member of the Yale economics faculty) of the structure, causes and effects of imperfect competition in the oil industry. A score of major companies are oligopsonists for crude oil towards a large number of sellers—the independent producers—by owning 80% of refining capacity and 85% of the pipe-lines; the same score are oligopolists for refined products towards a large number of nominally independent jobbers—so that 80% of wholesale outlets are tied to a major company. Not only does Professor Rostow find no evidence of economies of scale not equally accessible to smaller independents, but he comes to the important conclusion that monopolistic competition is socially more expensive than monopoly. Under outright monopoly (or under the system of co-operative control of each oilfield which he advocates) production for each well would be adjusted to the rate suitable to the geological structure, whereas the present system of "prorationing" (State-enforced allocation of quotas per well) encourages the multiplication of wells to secure a higher permitted output. Moreover, the Trade Association's basis for calculating these quotas—market demand at existing prices—reinforces the monopolist's typical underestimate of the elasticity of demand and perpetuates what the author calls "the staggering inefficiency of extractive methods." On the selling side, the attempts of oligopolists to increase their share of the market without resort to price competition lead to unjustifiable expenditure on, for example, advertising, service stations and research to endow motor spirit with sometimes spurious differentiations. Professor Rostow's chapters on the cost of monopolistic competition read in fact like a "Looking Glass" version of the arguments normally adduced in defence of monopoly. His book, the first of a new series *Studies in National Policy* in preparation at Yale University, has set a high standard, and readers will look forward to a comparison of his conclusions with those drawn from other industries.

Besides Professor Rostow's masterly analysis, Dr. Mendershausen's pamphlet cannot fail to appear slight, but it achieves

its purpose—an exposition of the paradox of 1949–50, when an "oil surplus" was accompanied by rising foreign prices and constant U.S. prices, when net earnings of oil companies fell, but dividends rose, and when investment was curtailed by American companies but not by the British. Dr. Mendershausen rightly points out that the "surplus" was artificial, motor spirit being still rationed in many countries and only residual fuel oil really abundant at world prices, and that U.K. restrictive policies (substitution of British oil for American) were due exclusively to the high dollar cost of oil imports. Nevertheless, one could have hoped for a deeper analysis: his descriptions of the oil companies' foreign price policy and of domestic industrial organisation are disingenuous, and it would have been helpful to have indicated even briefly the coincidence or divergence of company interests and suggested national economic policies.

There is none of Dr. Mendershausen's careful avoidance of the political and economic implications of oil policy in Sir Olaf Caroe's book. He offers a roving tour of the Middle East and succeeds—almost surprisingly—in mixing satisfactorily scenic description, oil-company statistics and local politics. The disappearance of a stabilising centre in British India and the renewal of Russian southward ambition are shown to necessitate a coherent unity of Islamic states. At the time of writing his proposition seemed economically sound: the separate economies, while not complementary, had similar needs and no major opposing interests, and oil revenue assured substantial flows of foreign exchange. The sacrifice of economic advantage, however, for nationalism in Persia has shown how easily this calculation may be upset. Politically, his wish was perhaps father to his thought: his plan for a regional defence treaty like the North Atlantic Treaty has since been abortively proposed by the Western Great Powers, and he fails to convince that the political tendencies of the area—centrifugal within and xenophobic without—can be overcome. Moreover, an occasional error of fact or of judgment will raise the reader's eyebrows: technical, like the mispositioning of the projected Iraq Petroleum and Anglo-Iranian pipe-lines; economic, like the reference to sterling oil as a "dollar-earner" and not as a "dollar-saver"; political, like calling Birobidzan a republic when it has only a lowly place (*oblast*) in the Soviet administrative structure; and prophetic like the confident assurance that in the Middle East "such is the importance of these oil reserves that it is unlikely that purely local interests will long prevail against world requirements."

His hopes have been rapidly overtaken by events, and his book becomes in many particulars a guide to the past: to the recent past, it is true, but still to the past.

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Poverty and the Welfare State. By B. SEEBOHM ROWNTREE and G. R. LAVERS. (London: Longmans, Green and Co., 1951. Pp. 97. 7*s.* 6*d.*)

So famous have the Rowntree studies become as to make the appearance of a new one a considerable event. These studies form a unique series in that they afford a picture of change since the turn of the century and a comparison between the pre-war years and the present day. In the 1936 study comparison with the original pioneering survey was made in terms of the lower physical minimum standard ("a standard of bare *subsistence* rather than *living*"); what had earlier been defined as "primary poverty" being alone considered, with the proviso that "it is important to realize that the number of persons actually living below the minimum standard is greater . . . than our figures indicate" (*Progress and Poverty*, p. 34). But in 1936 the amount of poverty was also calculated in terms of the higher Human Needs Standard (43*s.* 6*d.* exclusive of rent and rates for a man and wife and three dependent children, compared with 30*s.* 7*d.* for the lower standard). It is in terms of this Human Needs Standard that the 1950 study has been conducted; and by means of it comparison can be made with 1936, although with 1899 no such direct comparison is possible.

This new survey bears the sub-title, "A Third Survey of York dealing only with Economic Questions." Its main results are by now familiar enough. Since 1936 a fall in the poverty percentage is recorded from 31% (of the working-class population) to under 3% (or 4·6% of *families*); and old age and sickness, instead of unemployment, low wages or largeness of the family, have become the leading causes of poverty. What has attracted special attention in this study is the attempt which the authors have made to assess the influence of welfare legislation upon this result. They estimate that, if in 1950 welfare measures had been identical with those in force in 1936, the poverty percentage (of individuals) would have been 22 instead of 2·7. Had there been no food subsidies, the equivalent figure would have been 13·74; without family allowances 5·97; had unemployment been at the

1936 level, the figure would have been 7·85. In useful additional chapters they give the results of an analysis of housing conditions and of the extent of women's work and earnings; and in a concluding chapter evidence is cited to show that, while "on the average, children in all classes . . . are taller and heavier than children of corresponding ages were in 1936," yet "it still remains true that on the average children in any of our Classes 'A' to 'E' are taller and heavier than children in any lower class," and that children of the middle and upper-middle class "are, on the average, taller and heavier than those in Class 'E'" (the highest income-group among wage-earners).

This is a considerably more slender work, as published, than *Poverty and Progress* or the original *Poverty: a Study of Town Life*. The aim would appear to have been to make the exposition popular by reducing technicalities to a minimum and confronting the reader with as little as possible of the raw material of the investigation. The booklet, as a result, makes easy reading at a sitting, and the general reader can only be grateful to the authors for reducing so much to so little. This method, however, has one disadvantage: for the more inquiring reader it may leave important matters unexplained.

In the present case a question of this kind relates to certain features of the standard adopted; and, without tempering one's appreciation of the authors' enterprise, something should perhaps be said of the difficulty which at least one reader has experienced in following their results. *The Human Needs of Labour* had laid some emphasis upon the calorie and protein content of the diet, and from it we had grown accustomed to think of the Rowntree Standard as one of 3,400 calories and 100 grammes of protein per adult male per day. When one examines the details of the 1950 diet, one is surprised to find that the nutritive value works out at approximately 3,000 calories and 93 grammes. Comparison of the detailed items of the dietary with 1936 shows that the differences are insufficient to account for the apparent discrepancy. Yet no explanation is given of the difference; although reference is made in a footnote to the recalculation of the nutritive value of the dietary by Miss T. Schulz. The reader is left to find out for himself the explanation that the 1936 figures were calculated *gross* (*i.e.*, without allowance for wastage) and the 1950 figures *net*.

Unresolved questions relating to the standard arise also in some of the non-food items in the budget. Expenditure on clothing, for example, is calculated by taking twenty-nine budgets

for women and thirty-two for men, and in each case the average expenditure of the three lowest is adopted as the standard. (In 1936 it was in each case a rough average of twelve budgets, forming a group close to a central figure, which was taken out of a larger number; and for children's clothing a study of forty budgets was made.) In the only detailed examples given of these budgets it is noticeable that second-hand purchases have a fairly prominent place, in the case cited of women's clothing on page 18—a feature that was not apparent in 1936; and in the case given of men's clothing on page 20 there is provision for a raincoat once in three years, but no overcoat (although overcoats were allowed for in all the 1936 examples), and some shoe-repairs and knitting (of a pullover) are done at home. Altogether the 1950 clothing allowance for adult men and women shows a smaller advance on 1936 than do index number calculations of clothing prices, while the allowance for children's clothing shows a much greater advance. Under "Personal Sundries" it is curious to find that the cost of travelling to and from work has been left at the pre-war figure, and that the figure allowed for miscellaneous items (such as "beer, tobacco, presents, holidays, books, travelling etc.," amounting to 6*s*. 8*d*.) "will not buy anything like as much as 3*s*. 4*d*. did in 1936" (p. 23). Does this mean that the 1950 standard, as regards these items, is really lower than that of 1936?

At first sight questions of this kind might seem to involve quantities too small to deserve attention. That such small amounts cannot be dismissed so easily becomes clear, however, as soon as we examine the number of cases which lie very close to the poverty line. We find that some 8% of all families are above the poverty line by no more than five or six shillings ("living in conditions so stringent as to be hardly better off than those who are just below it"); so that the difference of a few shillings in the standard would make a large difference in the poverty percentage as stated and in the degree of improvement recorded.

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A Hundred Years A-Milling. (Edited by W. M. SCOTT.). (Belfast: H. R. Carter Publications Ltd. (for W. & C. Scott, Ltd., Excelsior Mills, Omagh), 1951. Pp. 266. 10*s*. 6*d*.)

"CENTENARIES don't 'just happen,' they have to be earned," remarks the son of Professor W. R. Scott, who edits this pleasant

volume, marking the centenary of an Ulster milling firm. A good public servant in itself, the firm is distinguished for economists because it helped so clearly to mould W. R. Scott in habits of realism and care, during his long connection with it as a partner in the Limited Company. All of us would be the better of such experience. Indeed, the qualities which earned the firm its centenary, over difficult times, are just those (among others more germane to scholarship) with which he was richly endowed—such as tenacity, quiet self-control and adaptability towards an outcome clearly envisaged.

The appeal of the book is therefore specially to those who had the good fortune to know W. R. Scott or are interested in the man who could write the *Joint Stock Companies to 1720*. In it they will find some explanation of the unusually strong union of Celtic imagination with meticulous respect for facts which inspired his work. The man who said "I have very good news," and then surprised his son by adding "No," it was not a bargain coup, but "the rooks have come back . . . they will bring us luck"; this man also learned to sift every piece of evidence to the last grain in the hard economies of the mill, sketched in this volume. It is indeed a pleasure to find a Mendelian strain re-appearing in the careful historical sketches of his grand-daughter, Felicity Walton.

It should not be expected (as it was not intended) that any primarily economic material should appear in such a festival memento. Yet in the accounts of living bodies we do feel the real pulse of history as a useful supplement to the inevitable dissections of many text-books. Here indeed we find confirmation of many text-book abstractions as well as of the wisdom in proverbs. It especially appears that "it is an ill wind . . ." Even the Irish potato-famine figures as a sharp stimulant to adaptation and inventions. They might well not have developed without it. But their achievement clearly depends on the enterprise of vigorous, imaginative, tenacious men. The race is here seen to be to the strong. And against the advantages of making conditions easier for all should be put a factor which we cannot measure, the check to new methods forced out of reluctant human nature by harsh necessity. Even people who may at the time be regarded as extravagant are justified by later discoveries. Of this a neat example is related here in M. Soyer, the chef who was brought from the Reform Club to Dublin during the famine, and whose "famine soups" science now confirms ("rich meat stocks are more stimulants than foods"), though their thinness enforced a discreet return to England on the ebullient chef. We also find

continuous evidence for the suspicion that absentee ownership (of all kinds) is a weak institution, not because such owners are more positively selfish than other people, but simply because we are capable of taking real interest only where we have direct touch. Again, the constant worries of position and transport costs appear here in the flesh. But especially we are impressed with the living current of goodwill as the most vital support to continuing growth in the smaller businesses; this is the healthy air and sunlight from which they gather constant strength. But they must earn it by hard service.

It is indeed their own air and sunlight that justify them. If we wish to enjoy the varying tastes of our rich counties, it is mainly the small businesses which can transmit their pungency. Our present volume impresses this through the pleasant sketches and poems of the Co. Tyrone country-side and manners with which it is interspersed. Especially grateful are the vivid memories of that Grand Old Lady, Mrs. Margaret Scott, which continually show an exact scholarship (the word is justified) in the most mundane affairs; a rather scarce gift she certainly handed on to her son. In sum, we have here a whiff of the bog myrtle and the mill which will refresh all in general, but perhaps west country folk in particular.

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Imperialism and Social Classes. By JOSEPH A. SCHUMPETER. Translated by HEINZ NORDEN. Edited with an Introduction by PAUL M. SWEEZY. (Oxford: Basil Blackwell, 1951. Pp. xxv + 221. 20*s*.)

THE title of this volume may easily mislead the unwary. It is not a book about the relations between imperialism and social class: it is simply a bringing together of two quite separate essays published by the late Professor Schumpeter, the one in 1919 and the other in 1927. They have no more in common than that they both embody criticisms of the Marxian theory, and are examples of a single method of approach. The essay on *The Sociology of Imperialisms* is both the longer and much the better known: that on *Social Classes in an Ethnically Homogeneous Environment* deserved to be recalled to the attention of modern sociologists. Neither has been translated into English before: the present translation, if sometimes unduly Germanic, is not at all bad.

Schumpeter ranked mainly as an economist; but his approach

to the social studies had always a sociological content. In these essays his method is throughout historical and, in view of their brevity, involves the use of selected historical illustrations of his general thesis. These illustrations are drawn from a wide range of reading: though Germany provides the greatest number, many countries and civilisations are invoked—from the Egyptian, Assyrian and Roman Empires to modern Britain, and from primitive peoples to the most advanced societies of the twentieth century. In each essay Professor Schumpeter has a quite clear thesis to sustain. Imperialism, he argues in the first, far from being a characteristic product of capitalism, comes out of pre-capitalist forces, and capitalism is truly its principal antagonist. This leads on to, or perhaps rests upon, a wider generalisation that the explanation of present social phenomena is best sought in the past, or, as Professor Schumpeter puts the matter in his final sentence, "The only point at issue here was to demonstrate, by means of an important example, the ancient truth that the dead always rule the living."

In the second essay Professor Schumpeter sets out to show that class is primarily a phenomenon of changing societies, that it rests upon social function and that, even when it is supposed to be most fixed, its individual and family composition display a high degree of fluidity. He is here concerned mainly with combating the "vulgar" notion of classes as fixed groups of persons or families, and with asserting that the foundations of class-differences are by no means necessarily economic, and have in fact been whatever have been at various times and places the main functional needs of the societies in which they have arisen. In particular, he stresses the importance of the fighting factor in the making of historical class structures. This links the second essay to the first; for there too he is insisting on the prime importance of the militaristic factors in imperialism as against the economic factors. In both essays there is evidence of Simmel's influence, as well as of reaction from that of the neo-Marxism of Bauer and Hilferding.

In the matter of imperialism, Professor Schumpeter, writing during the First World War from a standpoint exceedingly critical of German policy, is concerned to stress the essentially peaceable character of capitalism as such—by which he really means *laissez-faire* capitalism of the nineteenth-century type—and to argue that the phenomenon known as "economic imperialism" is not truly a development of the inner working of capitalism, but rather the outcome of capitalist attachment to States largely

dominated by militaristic castes and ideas. His account of the true genius of capitalism is entirely Cobdenite: he regards cartels, tariffs and the pushing of investment and search for concessions and power abroad as the outcome of state policy, using capitalism as an instrument. Whether he would have felt able to regard the policies of modern oil corporations in quite this light we can never know. His account of the matter seems to this reviewer as grossly over-simplified as that of Marx. He is, however, undoubtedly correct in arguing that, in nineteenth-century imperialism as a whole—witness Russia, as well as Germany—the sheerly militaristic element was quite as important as the economic element, and more dangerous because far more irrational and based on a sheer will to conquest without any limits. He is also correct in tracing this fact to the persistence in nineteenth-century European society of character-traits, prestige-attributions and social drives inherited from the pre-capitalist era. Where he was wrong was in his implied, though not explicit, judgment that these forces were in process of being overcome by the growth of economic forces.

The essay on Social Classes sets aside consideration of the problems which arise in ethnically mixed societies where class-structure has been affected by conquest. Within this limitation it deals with three questions, movement of families within a class, movement of families and individuals from class to class and changes in the social position of entire classes from time to time. On the first of these points, Professor Schumpeter draws attention to the evidence that points to large changes continually occurring in the families constituting superior classes, even where the classes have remained essentially the same in function and attitude. Such evidence is not available from many sources: what there is relates mainly to nobilities or gentries possessing statutory privileges. But few will doubt, even in wishing the evidence were better, that Professor Schumpeter's statement is correct, or that he is right in asserting that the principal factor in inter-class movement is skill in performing the appropriate function expected of the class in the society concerned—and right also in holding that some families have shown a hereditary aptitude in this respect over considerable periods. In respect of movement between classes, he again stresses this factor of—often hereditary—aptitude, and points out that societies in which movement from class to class has been impeded by legal obstacles have none the less shown considerable mobility, facilitated partly by the opportunities afforded to rise through service to the crown. Finally,

in discussing the rise and fall of entire classes, he relies on an explanation mainly in terms of changing social needs, involving emergence and obsolescence of function, with the secondary factor of differences in social adaptability shown by particular classes in history. This is an interesting essay, breaking ground that was almost new when it was written and has not been much travelled since, despite the abundance of recent, mainly American, writing on the sociology of class.

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International Economic Papers: Translations prepared for the INTERNATIONAL ECONOMIC ASSOCIATION. (London and New York: Macmillan, 1951. Pp. 244. 15*s*.)

AT the first meeting of the Council of the newly created International Economic Association in September 1950, it was decided that, as one of the principal means of ensuring the more effective transference of economic thinking between one country and another, the Association should establish an annual volume of translations into English of some of the most important articles that have appeared in the languages that are less familiar to most of us. When the English volume has been successfully launched, it is hoped to add to it a similar volume of translations into French.

International Economic Papers represents the first fruits of this decision. Under general guidance from the Association's Executive Committee, the tasks of selection were borne in the case of this volume principally by Mr. Peacock and Mr. Turvey of the London School of Economics and Mr. Houthakker, then attached to the Department of Applied Economics at Cambridge; Professor Lutz has since been added to the body of editors. Mrs. Henderson has been chiefly responsible for the onerous tasks of supervising and checking the translations. Much credit is due to all concerned for the prompt appearance of an attractive and valuable new addition to the periodical literature of economics.

The first issue certainly justifies the argument of those who advocated its establishment that important articles, deserving close attention, were being hidden from many of the less literate among us by their appearance in languages that we cannot or do not read. These languages have, probably rightly (for the series is intended for English-reading economists the world over),

been interpreted to include French and German as well as the Dutch, Scandinavian, Italian, Spanish and Eastern European languages which relatively few of us can hope to tackle.

The present issue includes ten articles. Of these, three had appeared first in French, two in Danish, two in Dutch, one in German and one in Russian. The three articles that appeared first in French include the very important article by Ragnar Frisch on *Monopoly-Polypoly—the Concept of Force in the Economy* which first appeared in the *Festschrift til Harald Westergaard*, published as a supplement to *Nationaløkonomisk Tidsskrift*. In this, Professor Frisch argues that there are a variety of strategies by which an entrepreneur can adapt his actions to the situation that confronts him : the simple case of quantity adaptation, the more complicated cases of estimating the probabilities of selling a given quantity (as in " tender ") and the giving or receiving an option to buy or sell a fixed quantity at a fixed price. He argues (here critics may feel anxious for more elucidation of the implied assumptions of his various curves) that there are fundamental differences between the " stochastic " supply curves which apply to these more complicated adaptations and the ordinary supply curve that belongs to quantity adaptation. At the same time individual sellers may possess certain powers to fix certain of the economic parameters which characterise the total situation; to maximise their profits they will vary their action parameters. It is therefore important for each seller to know in what direction and to what degree a change in his parameters will invoke a change in the parameters of his rivals and thus modify his own situation. Out of this Professor Frisch develops a theory of adaptation and of movement towards equilibrium. The whole system of thought is most stimulating, but, as I hinted above, I suspect that many English readers brought up in the analysis of long- and short-periods and prime and supplementary costs will want to see more clearly how Professor Frisch's analysis reconciles with their own ways of considering in what circumstances it may or may not pay to accept an offer.

Of the other two articles from the French, one is a study by Gabriel Dessus of the *General Principles of Rate-Fixing in Public Utilities*. This arose from the work of an international congress on electricity production and distribution, in which economists and engineers collaborated. The paper provides an admirably clear exposition of the main trends of economic thought in this field, and stresses in general terms the importance and difficulties of calculating marginal costs. It is written in the main, however,

at a fairly high level of abstraction, and it is not easy, even in the more detailed appendix, to judge how far the author would in fact believe it possible to calculate the long-term marginal costs of peak, near-peak and off-peak supplies, though a footnote tells us (without going into detail of how it could be done) that on the foundation of the solutions here advanced the French electricity authority has prepared a scheme of charges for high-tension supplies differentiated by areas, tensions, hours and seasons and drawing its direct inspiration from calculations of marginal cost.

The third of the French articles is a long and quite outstanding review article by Georges Guilbaud of *The Theory of Games*. He starts from Pareto and the problems and definitions of preference when applied to groups and goes on to the search for the *optimum* and the *extremum*, and (as in the Frisch article) there emerges the concept of strategy in the pursuit of objectives which are partly affected by the action of the individual and partly by that of his competitors. The essentials of the solution of a network of preferences are then laid out with great clarity and precision, and we end with the theory of the duel and of the ruse. For those who find Morgenstern and Von Neumann beyond them, but are anxious to see where their thought touches the fundamentals of economic analysis, this article is quite invaluable.

Of the remaining articles, by far the longest (it runs to nearly sixty pages) is one by the late Heinrich Von Stackelberg on *The Theory of Exchange Rates under Perfect Competition*, which was written shortly before the end of the war and appeared first in Spanish, and subsequently in the first post-war issue of *Jahrbücher für Nationalökonomie und Statistik*. It starts from the purchasing power parity theory and, after demonstrating the incompleteness of this as a total explanation of exchange rates, it goes on to build up a fuller and more complete theory, which takes account of the four elasticities of supply and demand of two trading countries, of transport costs and of capital movements. It shows how a freely moving exchange rate will secure a balance if certain elasticities can be assumed, but that inelasticities will produce abnormal and highly dangerous reactions, and that the possibility of such an abnormal reaction is a very real one—more particularly where there have been dramatic changes in capital movements or interest payments. Each main section of this article is followed by a mathematical or geometrical appendix which formulates the arguments and conclusions in more mathematical form than is adopted in the main text. This is a really important article that it is most valuable now to have in English.

I cannot deal with the other articles in similar detail, though their claims to close study are almost equally strong. They include one by Professor Schneider on *Saving and Investment in a Closed Economy* which appeared first in Danish. He analyses, with the aid of the now familiar distinction between *ex-ante* and *ex-post*, the meanings to be given to saving and investment and the effects on a closed economy's *ex-post* income. The broad conclusions of his argument can best be summed up in his own words : " the theories which would assign to the relation between total saving and total investment *ex-ante* a central causal rôle in the development of an economic system in time must be regarded as constructions of a very doubtful character."

The volume is completed by an article by Bent Hansen from *Ekonomisk Tidsskrift* on *Fiscal Policy and Wage Policy*, two articles by Jan Tinbergen on *The Significance of Wage Policy for Employment* and on *The Distribution of Labour Incomes*, a mathematical article by Emilio Zaccagnini on *Simultaneous Maxima in Pure Economics* and a most interesting article by S. G. Strumilin from the *Bulletin of the Academy of Sciences of the U.S.S.R.* on *The Time Factor in Capital Investment Projects*, which throws a great deal of light on the techniques applied to the solution of these problems in the U.S.S.R. All of these, in their different fields, are very rewarding.

It is very much to be hoped that the reception of this volume will justify both the initiative of the International Economic Association in making this important and very worth-while attempt to break down the barriers of language and the courage and long-sightedness of UNESCO in devoting to such a very valuable use some of the limited funds which are at present available for the social sciences.

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NOTES AND MEMORANDA

A Note on Professor Boulding's Macro-economic Theory of Distribution

In a stimulating book [1] Professor Boulding makes a courageous and very necessary attempt to construct a macro-economic theory of distribution, using the method of comparative balance sheets. His frequent use of algebraic symbols, however, and the consequent derivation of relationships which are often mere "truisms" lead him into at least one serious error.

The nature of this error can best be appreciated if we summarise briefly the main steps in Boulding's analysis. First, he sets out the Balance Sheet of a business as follows :

Table I

Balance Sheet of a Business

Assets		Liabilities	
Money	m_b	Debts to other businesses	k_b^1
Goods	q_b	Debts to households	k_h^1
Debts from other businesses	k_b	Net Worth	g_b
Debts from households	k_h		

As net worth is, by definition, equal to the excess of assets over liabilities, both sides of the balance sheet are equal, and we have the fundamental "balance-sheet identity" :

$$m_b + q_b + k_b + k_h \equiv k_b^1 + k_h^1 + g_b \quad . \quad . \quad . \quad (1)$$

This identity can be summed for all businesses in the economy. Inter-business debts will then cancel out, and we have the Business-Net-Worth Identity, where the capital letters denote totals :

$$G_b \equiv M_b + Q_b + (K_h - K_h^1) \quad . \quad . \quad . \quad . \quad (2)$$

i.e., Total Net Worth of Business ≡ Money holdings of business + Value of the goods (real assets) held by business + Net Household Indebtedness to Business.

The second step in Boulding's analysis is to recognise that the identity (2) can be differentiated and still hold good "if the

[1] K. E. Boulding, *A Reconstruction of Economics*, Chapter 14 (Wiley, 1950).

symbols represent not the stocks of assets or liabilities but the CHANGES in these quantities in any given time period." Thus

$$dG_b \equiv dM_b + dQ_b + dK_h - dK_h^1 \quad . \quad . \quad . \quad (3)$$

dG_b " is the change in the net worths of all businesses during the period under review. It may be called BUSINESS SAVINGS if positive, business dissavings if negative. It represents that part of total profits which has not been distributed in dividends." Similarly, dM_b represents the increase in business holdings of money, dQ_b the increase in the value of the real assets held by business and $(dK_h - dK_h^1)$ is the increase in net household indebtedness to business.

Finally, letting V represent the total profits of business, and D total business distributions in the form of interest and dividends, we have

$$V \equiv dG_b + D \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (4)$$

Using identities (3) and (4), Boulding then proceeds to derive the following " macro-economic paradox "—namely, " that business savings are for the most part not determined by the decisions of business to save, but are a result of a complex of other decisions which determine the volume of business savings independently of the decisions of business to save. . . . If we accept the fact that the total of business savings is independently determined, then business DECISIONS to save as reflected in dividend policy, determine not business savings but the level of profits itself . . . business distributions are a ' widow's cruse and Danaïd jar ' : the more business distributes in interest and dividends, the more will be returned to it in profits to distribute, the less it so distributes, the less there will be to distribute. . . . Suppose, for instance, that business savings, as given by the various items of equation (3) which determine the net increase in business assets, *i.e.*, in business net worth, are 10 billion. If businesses expect a profit of 30 billion and decide to save 12 billion, they will distribute only 18 billion; hence actual profits will turn out to be 28 billion instead of 30, and in spite of the decision to save 12 billion, businesses will succeed in saving only 10 billion. Similarly, if under the same circumstances businesses decide to save only 8 billion, and hence distribute 22 billion, the total of profits will be 32 billion, and again business, in spite of its decision to save 8 billion, will find itself saving 10 billion." [1]

This is Professor Boulding's " strange macro-economic world." It is a valid picture of the functioning of the capitalistic

[1] *Op. cit.*, pp. 249–50.

economic system only if it is true that business savings (dG_b) are in fact determined independently of business decisions to save, *i.e.*, if identity (3) is an economically meaningful relationship (whose constituent items are determined more or less independently) and not just a mere truism. Which of these two possibilities is the case depends upon the prevailing practice of business with respect to the timing of interest and dividend payments, and it can be shown that Professor Boulding's conclusions would hold good only under a most extreme and unrealistic set of circumstances.

Consider the progress of an individual business during a given year, which we shall depict by means of (*a*) the firm's Balance Sheet at the end of Year I, (*b*) a combined Trading and Profit and Loss Account for Year II and (*c*) the Balance Sheet at the end of Year II. Table II shows the firm's Balance Sheet at the end of Year I.

TABLE II

Firm's Balance Sheet at end of Year I

ASSETS		LIABILITIES	
Money	m_1	Debts to other businesses	k_{b1}^1
Goods	q_1	Debts to households	k_{h1}^1
Debts from other businesses	k_{b1}	Net Worth	g_1
Debts from households	k_{h1}		

Its net worth at that date is given by

$$g_1 \equiv m_1 + q_1 + (k_{b1} - k_{b1}^1) + (k_{h1} - k_{h1}^1) \quad . \quad . \quad (5)$$

Let us assume now that the firm engages in productive and selling activity during Year II. It will thus incur certain production and selling expenses (m^i) which we assume to be paid in cash as they become due, thus diminishing the initial money stock (m_1). Sales receipts (m^{ii}), on the other hand, will augment that stock. Let us also assume, for the sake of simplicity, that there is no change during the year in the firm's net indebtedness to other businesses. This assumption will not affect the subsequent argument, as, on summation, inter-business debts will in any case cancel out. The item k_{h1} represents debts owed by households to the firm, *e.g.*, instalment credit; and we may assume that it changes during Year II by an amount dk_{h1}. The item k_{h1}^1 represents business debts owing to households (bonds and securities issued by the firm); it is perfectly possible to assume also an increase in this quantity during the year, as the firm borrows more money either to finance current production or extend its capital

equipment. Both possibilities can easily be incorporated in our formal scheme, and they would not upset the relationships derived below; so to keep the model as simple as possible we shall assume no change in $k_{h1}{}^1$ during the year under review. Depreciation provision during the year could likewise be shown explicitly, without affecting our results, but we shall omit it also. The final assumption required for our first model is that there are no interim dividend payments—just a single, final payment at the close of the year. Table III then shows the firm's combined Trading and Profit and Loss Account for the year's operations.

TABLE III

Combined Trading and Profit and Loss Account

DR.		CR.	
To Initial Stock	q_1	By Sales Receipts	m^{ii}
Production Expenses	m^i	Goods advanced to households on credit	dk_{h1}
Net Profit	v	Closing Stock	q_2

Therefore,

$$v \equiv (m^{ii} - m^i) + (q_2 - q_1) + dk_{h1} \quad . \quad . \quad . \quad . \quad (6)$$

This represents the position at the immediate end of the trading year, when the Net Profit has been arrived at, and BEFORE any appropriations have been made for Dividends and Reserves. A Balance Sheet drawn up *then* would appear as follows:

TABLE IV

Balance Sheet at end of Year II (Before Appropriations)

ASSETS		LIABILITIES	
Money	$m_2 = m_1 + (m^{ii} - m^i)$	Debts to other businesses	$k_{b1}{}^1$
Goods	q_2	Debts to Households	$k_{h1}{}^1$
Debts from other businesses	k_{b1}	Net Worth	g_2
Debts from households	$k_{h1} + dk_{h1}$		

Therefore

$$g_2 \equiv m_2 + q_2 + (k_{b1} - k_{b1}{}^1) + (k_{h1} + dk_{h1} - k_{h1}{}^1) \quad (7)$$

Defining $(g_2 - g_1)$ as the GROSS change in the net worth of the firm we have

$$\begin{aligned} g_2 - g_1 &\equiv (m_2 - m_1) + (q_2 - q_1) + dk_{h1} \\ &\equiv (m^{ii} - m^i) + (q_2 - q_1) + dk_{h1} \\ &\equiv v \text{ (Net Profit)} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (8) \end{aligned}$$

i.e., Gross change in firm's net worth ≡ Year's Net Profit.

If the firm then decides to distribute a certain amount of its profits in dividends (m^{iii}), the result is the immediate and *simultaneous* reduction of both sides of the Balance Sheet by that amount; Money on the assets side being reduced from m_2 to $(m_2 - m^{iii})$ and Net Worth on the liabilities side being reduced from g_2 to $(g_2 - m^{iii})$. Thus the final position AFTER dividend distribution is that the

NET Change in Firm's Net Worth

$\equiv (g_2 - m^{iii}) - g_1$
$\equiv (g_2 - g_1) - m^{iii}$
$\equiv v - m^{iii}$
$\equiv$ That part of profits which has not been distributed in dividends . . . . . (9)

Summing identities (8) and (9) respectively for all businesses, and using the definition of profits from identity (6), we derive two important relationships.

$$\text{GROSS } dG_b \equiv V \equiv \text{Gross } dM_b + dQ_b + (dK_{h1} - dK_{h1}^1) \quad . \quad . \quad (10)$$

i.e., Gross Change in Total Business Net Worth

$\equiv$ Year's Total Business Profit
$\equiv$ Gross change in Business money stocks + Change in value of real assets held + Change in Net Household Indebtedness to Business.

The second relationship, from identity (9) is :

$$\text{Net } dG_b \equiv \text{Business Savings} \equiv \text{Net } dM_b + dQ_b + (dK_{h1} - dK_{h1}^1) \quad . \quad . \quad (11)$$

where the terms gross and net refer to the positions before and after dividend distribution respectively. While Boulding notes, in passing, the existence of identity (10), it is upon identity (11) that he concentrates and he uses it to derive the macro-economic paradox described above. It is obvious, however, that in this model the economically meaningful identity is (10), which equates the GROSS change in Net Worth to Profits earned. The transition from (10) to Boulding's NET identity (11) is a step which is here completely under the control of each individual business in particular and the totality of business in general. It is the level of profits which is determined independently of business decisions (or assumptions) about that level. Total business savings for the year can then be fixed at any desired level, according to the decisions of the business world; the implementation

of this set of decisions merely resulting in equal simultaneous reductions in Gross dG_b and gross dM_b. The resultant net relationship is thus not a very meaningful identity, and cannot show that business savings as a whole are independent of business decisions to save.

We must now relax the assumption that no dividend payments are made until the end of the trading period. Let us assume instead that an interim dividend is paid by all firms at the middle of the accounting period, which is taken to be the same for all businesses. Our apparatus of Balance Sheets and combined Trading and Profit and Loss Account can now be used twice over to picture the year's events. For the first half of the year identity (10) would still apply.

$$\begin{aligned} \text{Gross } dG_b &\equiv \text{Profits for half-year } (V^1) \\ &\equiv \text{Gross } dM_b + dQ_b + (dK_h - dK_h{}^1) \end{aligned}$$

A certain amount of V^1 is then distributed to shareholders, depending upon firms' dividend policies and their expectation of profits in the remaining half-year. For the second half of the year identity (10) will, of course, still hold good, but it is obvious that profits in the second half (V^{11}) *may* be influenced by the size of the interim dividend distribution. A possible relationship is a positive correlation between the interim distribution and household expenditure on business products, thus increasing gross dM_b in the second half of the year, and hence increasing V^{11} above the level it would have reached in the absence of any interim distribution. In this case, *part* of Professor Boulding's "macro-economic paradox" would be true—the more business as a whole distributes in dividends at the half-way stage, the more will be returned to it in profits during the second half-year (unless there is a sudden increase in the liquidity preference of households due, for example, to increased uncertainty about the size of the final dividend). But it is still not true that the level of business saving is determined independently of business decisions to save. Suppose that D^1 of V^1 has been distributed in the first half year, and that profits in the second half were V^{11}. If businesses as a whole desired to save an amount S during the whole year, then obviously it is quite within their power to do so by varying the final distribution accordingly. It will be D^{11} where $(V^1 - D^1) + (V^{11} - D^{11}) = S$. Or in terms of identity (10) profits in the second half-year are

$$V^{11} \equiv \text{Gross } dM_b + dQ_b + (dK_{h1} - dK_{h1}{}^1)$$

Businesses can then vary gross dM_b at will by parting with varying amounts of cash in the form of final-dividend payments until the net relationship,

Business Savings (in second half year) =

$$\text{Net } dG_b = \text{net } dM_b + dQ_b + (dK_h - dK_h^1)$$

gives the level of business savings required in the second half year to make up the year's total saving to the desired amount.

Removing the assumption of a uniform accounting period for all firms and of interim distributions taking place at the middle of that period will not alter the above conclusion about business savings, as it depends solely on the assumption that not all profits are distributed BEFORE the end of the accounting period to which they relate, so that there is scope for adjusting business savings to any predesired level by varying the size of the final distribution.

In this second model, therefore, Professor Boulding's conclusions about business savings are still not valid, though there may exist a relationship between interim dividend distributions and total profits for the whole period. Even the latter is very problematical. If shareholders expect a total distribution (D) at the end of the period they will plan their expenditure during the year accordingly, and run down their existing money stocks in anticipation of the dividend payment. If businesses then make an interim payment of D^1 this will only affect planned expenditure for the remainder of the period (and hence profits) IF the size of D^1 CHANGES shareholders' expectations about the year's total distribution. For example, if they now anticipate a second and final payment of D^{11} where $D^1 + D^{11} > D$, then the interim distribution will have favourably influenced profits in the second half of the year (and hence total profits for the whole period). It is conceivable, however, that very high interim distributions would adversely affect expectations about the financial stability of business and the size of the final payment.

Finally, it follows from the analysis of the previous model that Professor Boulding's conclusions about the determination of business savings would hold good only if ALL dividend distributions took the form of interim payments, *i.e.*, were made before the end of the accounting year in which they were earned. The year's Total Profit would be determined by the complex of forces shown in identity (10), and might be influenced by the total dividend distribution. At the end of the year, however, it would no longer be in the power of businesses to alter dM_b, since they had already distributed the year's dividends. Automatically,

therefore, business savings would be a mere residual, determined by the same complex of forces as Total Profits itself. This model is extremely unrealistic, as is also model one, while the second case probably approximates to reality. Professor Boulding's source of error has been his failure to distinguish clearly between the gross and net forms of the Business-Net-Worth identity ((10) and (11) on p. 5 above), and his selection of (11) as the significant relationship when, under realistic assumptions, it is a mere truism which follows automatically from the power of business as a whole to vary dM_b at will by varying their FINAL dividend distributions.

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THE LABOUR THEORY OF VALUE IN LEONTIEF MODELS

1. THE purpose of this Note is to set out the essential characteristics of the general equilibrium system of Professor W. Leontief [1] and to draw attention to the fact that this analysis is premissed upon a labour theory of value. It is now all the more important that users of the results obtained from the application of this model should be aware of the premiss. For the most recent theoretic development, by Professor P. A. Samuelson [2] and others who have extended the generality of the Leontief model, is likewise equally dependent upon the labour theory of value.[3]

2. The original Leontief model [4] aims to identify the equilibrium levels of output and price of all commodities in the productive system. A productive system may be conveniently regarded as comprising three parts: the scarce resources; the technology and competitive structure of the industries using those resources; the tastes and demand of consumers for final

[1] W. Leontief, *The Structure of American Economy, 1919–1939.* Oxford, 1951.

[2] P. A. Samuelson, Chapter 7, *Activity Analysis of Production and Allocation*, ed. T. C. Koopmans, Cowles Commission Monograph No. 13, 1951.

[3] The "generalised" Leontief model is still one in which all economising activities are assumed to be either absent or pre-determined.

[4] W. Leontief, *The Structure of American Economy, 1919–1929.* Harvard, 1941.

commodities. With regard to each of these parts Leontief makes a crucial assumption :

(i) There is only one original (*i.e.*, non-produced) scarce factor available for productive activity. This resource is labour.

(ii) The structure of production is perfectly rigid. In other words, all factors required to produce a commodity must be used in fixed proportions; and returns to scale are constant at unity. (Taken together, these two assumptions give the " fixed input coefficients " postulate.) [1]

(iii) The demand for each consumer-good is such that price elasticities of demand are zero and income elasticities of demand are unity.

The Leontief model of the productive system then consists of relations of three types : [2]

I. *The Intersector Condition*

The output of a commodity (or factor) is equal, in equilibrium, to the total quantity of that commodity used throughout the productive system by consumers and other industries.

II. *The Cost Equation*

The total payments made by an industry for factors equal the value of the industry's output.

III. *The Production and Consumption Functions*

By virtue of the assumptions under (ii) above, the input of any variable factor into an industry rises proportionately with the industry's output. Similarly under (iii) above, consumers' purchases of a commodity vary proportionately with their income.

From these three sets of equations the equilibrium levels of output and price of all commodities in the productive system are deduced. The results may be stated as follows :

[1] Two other assumptions made as to the structure of industry are :

(*a*) There is no joint production;

(*b*) The system is in competitive equilibrium.

[2] To establish the validity of this construction as a representation of the productive system, it is necessary to :

(*a*) identify the nature and mode of operation of a system of general interdependence;

(*b*) derive the Leontief model as a special case of such a system.

These problems are considered in two forthcoming papers.

(*a*) Given the total level of employment, the level and composition of aggregate final demand is also known. The equilibrium level of output of any commodity i is the quantity of i necessarily embodied in this final bill of goods. By virtue of the fixed input-coefficients postulate, this output of i may immediately be written down as a sum of products of these known coefficients.[1]

(*b*) The price of commodity i relative to that of labour is equal to the amount of labour time required for its production.[2]

These results are derived in the Appendix (equations (VI) and (X)) for a simple case of the Leontief system.

3. The most recent development in the literature on Leontief models is the "substitution theorem."[3] The theorem is this: Assuming constant scale returns, no joint production and only one scarce primary factor (labour), then[4]

> "Even if each industry has a choice of many alternative processes for the production of its commodity, it is compatible with efficiency of production as a whole that each industry uses only one of the processes available to it, and this same process can be used regardless of the commodity composition of the net output of all industries taken together and regardless of the amount of labour available."

Now for a world of constant scale returns (at unity), no joint production and labour the sole scarce resource, two conclusions would appear to be almost intuitively obvious:

1. The price of a commodity (in terms of the wage-rate) will equal the number of man-hours required to produce it.

2. For any commodity there *is* a technically most efficient method of production—namely that which requires the minimum amount of the scarce factor. Hence under institutions constraining efficiency, that method will be used.

[1] This is the result stated by Leontief (*op. cit.*, p. 51):

$$X_{i1} = \frac{D_{1i}}{D_{11}} \cdot \frac{A_i}{A_1} \cdot \frac{B_i}{B_1}.$$

[2] This is the result stated by Leontief (*op. cit.*, p. 47):

$$P_{i1} = \frac{\Delta_{1i}}{\Delta_{11}}.$$

[3] P. A. Samuelson, *op. cit.*

[4] T. C. Koopmans, Chapter 8, "Activity Analysis," *op. cit.*, p. 147.

It is certainly interesting to have rigorous demonstrations of such theorems. But we may question their value unless as a step towards co-ordinate theorems for a world in which there is more than one scarce resource.

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Appendix

It is permissible to consider a simple version of the Leontief model, for the method to be followed and the results to be proven will be found valid for the general form of the original model. Assume then that current saving and investment are zero; and suppose that there are but three consumer-goods. Let us further content ourselves with the problem of determining the price and output of consumer-goods.[1] As the Leontief model is perfectly rigid we may, by consolidation, eliminate all intermediate (or process-) goods from our analysis without any loss in the explanatory value of the model so far as the final outputs of consumer-goods are concerned.

The following notation is used :

P_a the price of commodity a.
X_b the output of commodity b.
x_{ia} the input of factor i used in the production of a.
u_{ia} the quantity of factor i required in the production of one unit of commodity a.

The subscript n refers to labour. Hence x_{na} is the input of labour used in the production of a; and x_{an} is the consumption ("input") of commodity a by the labour force.

The three sets of equations are then as follows :

$$\left.\begin{aligned} X_a &= x_{ab} + x_{ac} + x_{an} \\ X_b &= x_{ba} + x_{bc} + x_{bn} \\ X_c &= x_{ca} + x_{cb} + x_{cn} \\ X_n &= x_{na} + x_{nb} + x_{nc} \end{aligned}\right\} \quad . \quad . \quad . \quad \text{(I)}$$

$$\left.\begin{aligned} X_aP_a &= x_{ba}P_b + x_{ca}P_c + x_{na}P_n \\ X_bP_b &= x_{ab}P_a + x_{cb}P_c + x_{nb}P_n \\ X_cP_c &= x_{ac}P_a + x_{bc}P_b + x_{nc}P_n \\ X_nP_n &= x_{an}P_a + x_{bn}P_b + x_{cn}P_c \end{aligned}\right\} \quad . \quad \text{(II)}$$

[1] A commodity is here termed a "consumer-good" so long as a portion of its output is demanded by final consumers.

$$\left.\begin{array}{llll} & x_{ba} = u_{ba}X_a\,; & x_{ca} = u_{ca}X_a\,; & x_{na} = u_{na}X_a \\ x_{ab} = u_{ab}X_b\,; & & x_{cb} = u_{cb}X_b\,; & x_{nb} = u_{nb}X_b \\ x_{ac} = u_{ac}X_c\,; & x_{bc} = u_{bc}X_c\,; & & x_{nc} = u_{nc}X_c \\ x_{an} = u_{an}X_n\,; & x_{bn} = u_{bn}X_n\,; & x_{cn} = u_{cn}X_n & \end{array}\right\} \quad \text{(III)}$$

Consider first the determination of the level of output. By substituting from set (III) for the values of $x_{ij}(i, j = a, b, c)$ in the first three equations of set (I), we obtain

$$\left.\begin{array}{rrrr} X_a - u_{ab}X_b - u_{ac}X_c = x_{an} \\ -u_{ba}X_a + X_b - u_{bc}X_c = x_{bn} \\ -u_{ca}X_a - u_{cb}X_b + X_c = x_{cn} \end{array}\right\} \quad . \quad . \quad . \quad \text{(IV)}$$

Let us now regard x_{an}, x_{bn}, x_{cn} as parameters.

Let D be the determinant of (IV), and let D_{ab} the minor of the first row and second column. Then by Cramer's rule we may write down the solution of (IV) as follows :

$$\left.\begin{array}{l} X_a = x_{an} \cdot \dfrac{D_{aa}}{D} + x_{bn} \cdot \dfrac{D_{ba}}{D} + x_{cn} \cdot \dfrac{D_{ca}}{D} \\ X_b = x_{an} \cdot \dfrac{D_{ab}}{D} + x_{bn} \cdot \dfrac{D_{bb}}{D} + x_{cn} \cdot \dfrac{D_{cb}}{D} \\ X_c = x_{an} \cdot \dfrac{D_{ac}}{D} + x_{bn} \cdot \dfrac{D_{bc}}{D} + x_{cn} \cdot \dfrac{D_{cc}}{D} \end{array}\right\} \quad . \quad . \quad \text{(V)}$$

By substituting from the last line of set (III) for the values of $x_{in}(i = a, b, c)$ in set (V), we obtain the result that for any consumer good i

$$\frac{X_i}{X_n} = u_{an} \cdot \frac{D_{ai}}{D} + u_{bn} \cdot \frac{D_{bi}}{D} + u_{cn} \cdot \frac{D_{ci}}{D} \quad . \quad . \quad \text{(VI)}$$

The meaning of this solution for the level of output of a consumer-good is readily seen. Consider commodity a. From (V) it is seen that $\dfrac{D_{ba}}{D}$ is the increase in the output of a resulting from a unit increment in consumption of b; also this increase is a constant. As u_{bn} is the proportion of national income (using the wage-rate as *numéraire*) which is spent on b, it follows that the expression $u_{bn} \cdot \dfrac{D_{ba}}{D}$ is simply the output of a (relatively to national production as conveniently measured by X_n, the total output of labour) which results from the existence of the consumers' final demand for b. Similarly, $u_{cn} \cdot \dfrac{D_{ca}}{D}$ is the relative output of a resulting from consumer demand for c; and $u_{an} \cdot \dfrac{D_{aa}}{D}$

is the relative output of a resulting from consumer demand for a. Clearly the sum of these three gives the total (relative) output of a.

Before considering the determination of prices, let us establish the total increase in employment resulting from a unit increment in consumer demand for a commodity. Consider commodity a. From the last column of set (III), we have

$$x_{na} = u_{na}X_a.$$

Substituting in this for X_a from (V) we have

$$\left.\begin{aligned} x_{na} &= u_{na} \cdot \frac{D_{aa}}{D} \cdot x_{an} + u_{na} \cdot \frac{D_{ba}}{D} \cdot x_{bn} + u_{na} \cdot \frac{D_{ca}}{D} \cdot x_{cn} \\ \text{also } x_{nb} &= u_{nb} \cdot \frac{D_{ab}}{D} \cdot x_{an} + u_{nb} \cdot \frac{D_{bb}}{D} \cdot x_{bn} + u_{nb} \cdot \frac{D_{cb}}{D} \cdot x_{cn} \\ x_{nc} &= u_{nc} \cdot \frac{D_{ac}}{D} \cdot x_{an} + u_{nc} \cdot \frac{D_{bc}}{D} \cdot x_{bn} + u_{nc} \cdot \frac{D_{cc}}{D} \cdot x_{cn} \end{aligned}\right\} \text{(VII)}$$

the last two equations being obtained by similar substitution from set (V) in the last column of set (III).

It is immediately seen that a unit increment in consumer-demand for a will involve an increase in employment:

in industry a by $u_{na} \cdot \dfrac{D_{aa}}{D}$ man hours;

in industry b by $u_{nb} \cdot \dfrac{D_{ab}}{D}$ man hours;

in industry c by $u_{nc} \cdot \dfrac{D_{ac}}{D}$ man hours.

As each of these is a constant it follows that the amount of the single scarce resource labour embodied in one unit of consumer-good i is

$$u_{na} \cdot \frac{D_{ia}}{D} + u_{nb} \cdot \frac{D_{ib}}{D} + u_{nc} \cdot \frac{D_{ic}}{D} \quad . \quad . \quad \text{(VIII)}$$

Finally, prices are determined by substituting from set (III) in set (II) to give

$$\left.\begin{aligned} u_{na}P_n &= P_a - u_{ba}P_b - u_{ca}P_c \\ u_{nb}P_n &= -u_{ab}P_a + P_b - u_{cb}P_c \\ u_{nc}P_n &= -u_{ac}P_a - u_{bc}P_b + P_c \\ P_n &= -u_{an}P_a - u_{bn}P_b - u_{cn}P_c \end{aligned}\right\} \quad . \quad . \quad \text{(IX)}$$

Taking P_n as *numéraire* and dropping the fourth equation,[1] it

[1] This presumes the consistency of the four equations. Leontief covers this point (*op. cit.*, pp. 46–7) by the introduction of a coefficient A_n as divisor of all the coefficients u_{in} ($i = a, b, c$) in set (III).

is seen that the determinant of the first three equations of (IX) is the determinant D with rows and columns interchanged. Hence by Cramer's rule we may immediately write down the relative price of commodity i:

$$\frac{P_i}{P_n} = u_{na} \cdot \frac{D_{ia}}{D} + u_{nb} \cdot \frac{D_{ib}}{D} + u_{nc} \cdot \frac{D_{ic}}{D} \quad . \quad . \quad \text{(X)}$$

This result is identical with (VIII) above. In other words, the price of a commodity relative to that of labour is equal to the amount of labour-time required for its production.[1]

The Matrix Multiplier and an Ambiguity in the Keynesian Concept of Saving [2]

In his article on "The Multiplier as Matrix" [3] Professor Goodwin has taken an important forward step in the generalisation of the theory of the multiplier in both its static and dynamic formulations. In his exposition, however, he has made the matrix multiplier depend (unnecessarily) on a highly unrealistic assumption, the non-fulfilment of which may make the equilibrium of sector transactions attained through the multiplier an extremely short-run affair, or even prevent it from being attained. In so doing, Professor Goodwin has apparently been misled by a fundamental ambiguity in the Keynesian definition of saving.

In the article, Professor Goodwin implicitly defines saving as the accumulation of idle balances, and investment as the running down of idle balances. Thus on p. 532 he speaks of "saving (absorptions of purchasing power)" and "investment (injections of purchasing power)"; and on p. 542 he states that "households or firms may either be sources or sinks of the flow of funds." It is primarily this concept of investment as consisting in the release of idle balances which gives rise to difficulties.[4]

[1] I have since noted that this corresponds to the result stated by N. Georgescu Roegen: "The ratios between the long-run equilibrium prices and the wage-rate are equal to the labour-input coefficients of the *most advantageous* completely integrated transformations." "Leontief's System in the light of recent results," *Review of Economics and Statistics*, Vol. 32, 1950, p. 217.

[2] This note was prompted by a question of Professor D. H. Robertson's, and has benefited by his criticisms.

[3] Economic Journal, Vol. LIX, No. 236 (December 1949), pp. 537–55.

[4] Strictly speaking, it is only the excess of a sector's saving over its investment which leads to "absorption of purchasing power," or the excess of its investment over its saving which leads to "injection of purchasing power"; this complication does not arise in the simple Keynesian model, in which the household sector saves without investing and the other sectors invest without saving. In what follows, "investment" and "saving" must be understood to be net of whatever saving or investing is being done from current receipts by the sectors concerned.

The reason is that this release of idle balances through investment is not a once-for-all event, but a continuous process—a rate of release of funds in the static version of the theory, and a release of a certain amount of money per time period in the dynamic version. In short, investment in Professor Goodwin's exposition involves the continuing running-down of a stock; and it is this which jeopardises the attainment or continuance of the matrix-multiplier equilibrium, since stocks of money held by firms are far from unlimited, and their exhaustion must bring an end to the investment they finance. Except on the highly unrealistic assumption that stocks of money held by investing firms *are* unlimited, therefore, the matrix multiplier as Professor Goodwin has developed it can operate only in the extremely short run, perhaps in too short a run for it to work itself out to an equilibrium.[1] This being so, it cannot be regarded as a very useful or interesting theoretical tool.

Fortunately, there are two possible ways out of the difficulty; neither, however, is consistent with Professor Goodwin's exposition. The first is to assume that the banking system is prepared to create unlimited quantities of money in exchange for securities sold or pledged by the investing firms. This would be a more realistic assumption than that required by Professor Goodwin's argument, although as a continuing process it depends on special subsidiary assumptions about the banking system; it would be inconsistent with Professor Goodwin's exposition, since it would mean that the banks, and not the investing firms, would be the "sources of the flow of funds." The second way out is to assume that the investing firms obtain the funds which they inject by selling securities to other firms and households in exchange for their (current) savings. In this case, which is the more realistic for the longer-run analysis, the investing firms could not accurately be described as injecting funds, nor could the saving firms and households be described as absorbing funds. Both groups would (in equilibrium) be making disbursements equal to their receipts; but the investing firms would be spending more *on goods and services* than they were receiving from current sales of goods and services, and the saving firms and households would be spending less, the difference being accounted for by sales or purchases of securities.

[1] This is a different point from the fact that the matrix multiplier, like the more usual Keynesian multiplier, must be a tool of short-run analysis, since it ignores the effects of investment on capacity output; in its own terminology, the matrix multiplier abstracts from the effects of investment on the input-coefficients of the investing sector.

Either of these two assumptions could easily be introduced into the matrix multiplier theory in place of the one indicated by Professor Goodwin's exposition, and either would suffice to free the theory from the ephemerality to which its author has inadvertently restricted it.[1] Specifically, a re-definition of terms, associating saving and investment with purchases and sales of securities rather than with absorptions and injections of funds, is all that is required to make the matrix multiplier a potent theoretical tool (within, of course, the usual framework of abstraction from problems of economic growth).

Professor Goodwin's definitions of investment and saving in terms of injections and releases of purchasing power, which are responsible for the unnecessary restriction on the usefulness of the matrix multiplier theory, are probably attributable to an ambiguity in Keynes's definition of saving in the *General Theory of Employment, Interest and Money*.[2] His definition of saving as the excess of income over consumption leaves open the question as to whether the excess is held as a (continually increasing) stock of cash or is spent on securities; yet the difference between the two cases is a vital one, because the first involves a continually increasing liquidity-preference function, whereas the second involves no change in liquidity-preference. If saving is of the first kind, equilibrium is only possible *either* on the assumption of an unlimited supply of money (which would make the liquidity-preference part of the theory rather uninteresting) *or* on the condition that the level of income must be low enough (or, possibly, the rate of interest high enough) to eliminate all such saving. Only if saving is of the second kind will the equilibrium of propensity to save, marginal efficiency of capital schedule, liquidity-preference schedule and fixed quantity of money, as expounded by Keynes and others, be a genuine equilibrium (again abstracting from problems of economic growth). In expounding his matrix multiplier, Professor Goodwin was apparently misled

[1] Messrs. Turvey and Brems, in their useful simplification of the matrix multiplier ("The Factor and Goods Markets," *Economica*, February 1951, pp. 57–68), do not restrict their analysis by identifying saving and investment with absorptions and releases of cash as Professor Goodwin does; on the other hand, they do not specify their assumptions in this respect at all.

It is noteworthy that in the theory of foreign-trade multipliers, where the matrix multiplier was first developed (although in implicit and rudimentary form) it was recognised from the beginning that multiplier equilibrium depended on other conditions besides the equality of saving and investment. Cf. F. Machlup, *International Trade and the National Income Multiplier* (Philadelphia, 1943), *passim*.

[2] Macmillan, 1936, p. 62.

into adopting the theoretically more awkward case covered by the ambiguous Keynesian definition.[1]

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CURRENT TOPICS

WE hear with deep regret that Sir Hubert Henderson, our President, has found himself obliged by reasons of health to resign the office of Warden of All Souls College, Oxford, to which he was recently elected. We pray that he may in due course be restored again to full health and activity.

WE record with deep regret the death of Dr. A. W. Menzies-Kitchin, Reader in Agricultural Economics in the University of Cambridge. He had contributed a number of important articles on agricultural economics to this JOURNAL.

WE wish to draw the attention of all Fellows to the fact that certain pre-war publications of the Royal Economic Society, which are now out of print, command high prices in the second-hand book markets. Among important works for which there is a continuing demand for purposes of teaching and research are Professor Edgeworth's *Papers Relating to Political Economy*, Professor Kahn's translation of Wicksell's *Interest and Prices*, Professor Unwin's *Studies in Economic History* and *Memorials of Alfred Marshall*, edited by Professor Pigou. We would venture to suggest that any Fellows who have copies of these which they no

[1] Professor Goodwin is not alone in being troubled by the ambiguity of the Keynesian definition of saving; it is also largely responsible for the confusion over the question of the effect of an increase in saving on the rate of interest; cf. D. H. Robertson, *Essays in Monetary Theory* (Staples Press, 1940), pp. 18–20, and Joan Robinson, "The Rate of Interest," *Econometrica*, Vol. 19, No. 2 (April 1951), pp. 106–9. Professor Robertson, by adhering consistently to a concept of saving as the purchase of securities and postulating an initial net increase in the propensity to save, gets the rate of interest to fall. Mrs. Robinson, by matching increased saving in one sector initially by increased investment in another and using the two possible kinds of saving alternatively with the two corresponding possible ways of financing the investment, gets the rate of interest to rise, stay constant or fall, accordingly as aggregate liquidity-preference is increased, unchanged or decreased; eventually she makes the same assumption as Professor Robertson and gets the same result (with complications introduced by dealing with four types of securities in place of Professor Robertson's one, which are necessarily ignored in this note).

longer require should get in touch with university booksellers, either in the United Kingdom or in America.

Works and Correspondence of David Ricardo. The fifth volume, containing his Speeches and Evidence to Parliamentary Committees, has recently been published. All of these first five volumes are on sale to the public at 24*s.* each and to members at 16*s.* each, post free. Applications, accompanied by a remittance, should be sent to The Assistant Secretary, Royal Economic Society, 6 Humberstone Road, Cambridge.

Economic Writings of Jeremy Bentham. It is hoped to publish the first volume of the edition prepared for the Royal Economic Society by Dr. Stark during April next. The second volume is expected to be ready during the course of the summer. A notice inviting members to apply for copies of these is included in this issue.

THE most recent issue in the series of *Essays in International Finance*, published by the International Finance Section of Princeton University, New Jersey, is a lengthy article on *The Pound Sterling*, by Mr. R. F. Harrod. A strictly limited number of copies has been made available to the Royal Economic Society for distribution *gratis* to those seriously interested in the subject. Fellows of the Royal Economic Society who desire a copy should apply to Mr. S. J. Buttress, 6 Humberstone Road, Cambridge.

THE London Political Economy Club is prepared to offer to members of the Royal Economic Society a small number of copies of its centenary volume. These copies are identical in all respects with the original publication of 1921, save that they contain no engraving of Ricardo's portrait. They contain a record of members and questions discussed by the Political Economy Club from 1821 to 1920, copious extracts from the famous diaries of J. L. Mallet and J. L. Prevost, and a selection of letters and biographical material relevant to the history of the Political Economy Club from Say, Ricardo, Senior, Overstone, Jevons, Sidgwick and many others. The edition, which has never been sold to the general public, will be available to members of the Royal Economic Society at 25*s.* Members desiring to buy copies are asked to communicate with the Assistant Secretary, Mr. S. J. Buttress, 6 Humberstone Road, Cambridge.

WE offer our best congratulations to Mr. J. R. Hicks, Fellow of Nuffield College, Oxford, on his election to the Drummond Professorship of Political Economy in the University of Oxford.

RECENT PERIODICALS AND NEW BOOKS

Journal of the Royal Statistical Society (Series A)

VOL. CXIV, PART IV, 1951. *Indices of Wholesale Prices :* J. STAFFORD (with discussion). *United Kingdom Publishing Statistics :* MARJORIE DEANE. *Urban Population Densities :* C. CLARK. *Recent Advances in Mathematical Statistics. Bibliography, 1943–47. Annual Report of the Council. Proceedings of the One Hundred and Seventeenth Annual General Meeting.*

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VOL. XVIII, NO. 72, NOVEMBER 1951. *Monopolistic Competition Revisited :* E. H. CHAMBERLIN. *The Port of Liverpool and the Crisis of 1793 :* F. E. HYDE, B. B. PARKINSON and SHEILA MARRINER. *Industrial Technologists and the Social Sciences :* R. S. EDWARDS. *Notes on Linear Programming :* G. MORTON. *The Science of Human Action :* L. M. LACHMANN.

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VOL. IV, NO. 1, 1951. *The Repeal of the Corn Laws and the Politics of the Forties :* G. KITSON-CLARK. *Ridge and Furrow and Agrarian History :* E. KERRIDGE. *Anglo-French Trade and the "Unfavourable Balance" Controversy, 1660–1685 :* M. PRIESTLEY. *The Historical Analysis of the Terms of Trade :* W. W. ROSTOW. *The* Assise de Teneure *and the* Assise de Vente; *a study of landed property in the Latin Kingdom :* J. PRAWER. *Wakefield and Marx :* H. O. PAPPE. *Walther Rathenau; a pioneer of the planned economy :* W. O. HENDERSON. *Revisions in Economic History XIII. The Development of Central Banking after Bagehot :* R. S. SAYERS.

VOL. IV, NO. 2, 1951. *The Medical Professions in the Eighteenth Century :* BERNICE HAMILTON. *The Fluctuations of the Anglo-Gascon Wine Trade during the Fourteenth Century :* MARGERY K. JAMES. *The Kelp Industry in the Highlands and Islands :* M. GRAY. *The Settlement of Protestant Refugees in Maidstone during the Sixteenth Century :* VALERIE MORANT. *An Eye-witness's Account of a Seventeenth-century Enclosure :* W. H. HOSFORD. *London Scriveners and the Estate Market in the later Seventeenth Century :* D. C. COLEMAN. *Treasure and Trade Balances; further evidence :* C. WILSON. *Richard Price and Pitt's Sinking Fund of 1786 :* C. B. CONE. *Essays in Bibliography and Criticism XVIII. The Ural Metal Industry in the Eighteenth Century :* E. KOUTAISSOFF.

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VOL. XIX, NO. 3, SEPTEMBER 1951. *Migration and the Rhythm of Economic Growth, 1830–1913 :* B. THOMAS. *World Trade in Manufactured Commodities, 1899–1950 :* H. TYSZYNSKI. *An Investigation of Hedging on an Organised Produce Exchange :* B. S. YAMEY.

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VOL. XXIII, NO. 1, JANUARY–MARCH 1952. *Special Number—The Soviet Union. Soviet Public Administration and Federalism :* J. N. HAZARD. *Controls in Soviet Literature :* E. J. SIMMONS. *The Zigzags of Soviet Foreign Policy :* A. WERTH. *The Soviet Economic System :* A. BAYKOV. *Industry and Agriculture in the U.S.S.R.:* A. BAYKOV. *Soviet Labour Problems :* G. R. BARKER.

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VOL. XVIII, NO. 47, 1950–51. *Alternative Anti-Inflationary Fiscal Policies :* L. S. RITTER. *The Effects of Rationing on Demand Elasticities :* J. TOBIN and H. S. HOUTHAKKER. *Thomas Joplin and the Theory of Interest :* R. L. MEEK. *Marx's Mehrwert Concept and Theory of Pure Capitalism :* H. GOTTLIEB. *A Critical Note on the Definition of Related Goods :* S. ICHIMURA. *A Comment on Mr. Ichimura's Definition :* J. R. HICKS. *A Note on Mr. Meade's Theory of Competitive Speculation :* H. WOKING. *"The Economist and the State"—an addendum :* J. BUTTRICK.

VOL. XIX, NO. 48, 1951–52. *Price Discrimination and the Multiple-Product Firm :* E. W. CLEMENS. *An Exposition of the Keynesian System :* IRA O. SCOTT. *The Construction of the Leontief System :* B. CAMERON. *Optimum Welfare and Maximum Revenue Tariffs :* H. G. JOHNSON. *The "Optimum Tariff" and the Cost of Exports :* J. J. POLAK. *Employment Policies and the Problem of International Balance :* N. KALDOR. *A Survey of Price Elasticities :* W. Z. HIRSCH. *The Speculative Demand for Securities and Carry-Over :* R. TURVEY.

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VOL. XVIII, No. 335, 1951. *The Gramophone Record; industry and art.*
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VOL. XIX, NO. 92, DECEMBER 1951. *"The Child is Father to the Plan":* J. A. F. WATSON. *The Pennine Way:* T. STEPHENSON. *Children Out of School:* L. E. WHITE. *London's Housing Organization. Major Highways; some urgent problems:* T. F. THOMSON. *Sydney Plan and New Town:* S. L. LUKER.

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VOL. XVIII, NO. 3, JULY–SEPTEMBER 1951. *La civilización industrial norteamericana ; reflexiones de un mexicano :* A. C. FLORES. *Desarrollo económico y estabilidad :* J. AHUMADA. *El problema de la productividad y la escasez relativa de factores :* COMISIÓN ECONÓMICA PARA AMÉRICA LATINA. *La reforma bancaria y el control selectivo del crédito en Colombia :* A. GARCÍA. *El equilibrio del mercado del café en Cuba :* J.A.y. UROSA. *El método matemático en la economía :* G. J. STIGLER.

Revista de Economia

VOL. IV, NO. 3, SEPTEMBER 1951. *Histoire Économique et Économie Politique :* V. M. GODINHO. *Los espacios de Riemann y la Economía Matemática.*

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NO. 24, SEPTEMBER 1951. *Aplicación de la Ficha de Control a la Industria Azucarera :* J. E. ABONA. *Renovación Biológica del Grupo Vizcaíno :* C. S. ESTÍVARIZ. *Los Efectos del Impuesto sobre la Renta :* A. ARAMBILET. *El Problema del Costo :* S. MANTILLA.

Revista de la Escuela de Estudios Contables

VOL. III, NO. 10 April 1951. *Breves Comentarios Acerca de la Contabilidad en las Empresas Agrícolas :* E. F. ROMO. *E. Papel del Empresario en la Administración del Personal :* I. G. VALDIVIA. *La Conciliación en Nuestra Legislación Laboral :* C. D. C. RAMÍREZ. *Cuál es la Realidad Respecto a Depreciaciones ? :* J. D. LEGORRETA. *El Problema del Pleno en las Compañías de Seguros :* L. DE G. URIARTE. *Algo sobre la Teoría Pura y la Teoría Egológica ; Kelsen y Cossio :* J. S. GUANDIQUE. *La Investigación de Mercados, Instrumento al Servicio de la Administración:* J. P. SALDAÑA, Jr.

VOL. III, NO. 11, JULY 1951. *Relaciones de Afiliación entre Tres o más Compañías :* H. G. ROSALES. *Algo Sobre los Sujetos Bancarios en el Derecho Mexicano :* S. F. DE LA GARZA. *Algunos Aspectos de la Auditoría*

para Otorgamiento de Créditos por Instituciones Bancarias : C. A. BELAUNZARÁN. *Impedimento Fiscal de las Instituciones Mexicanas de Seguros para Operar en el Extranjero :* R. HERNÁNDEZ H. *La Investigación de Mercados, Instrumento al Servicio de la Administración :* J. P. SALDAÑA. *Cinco Estudios Sobre Problemas de Seguros :* A. C. JIMÉNEZ, R. L. M. MOLINA, L. N. VARGAS, S. G. ARREOLA, R. DE IRÉZABAL.

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DECEMBER 1951. *The Economic Situation. Sweden and Marshall Aid. The Swedish Cement Industry.*

Økonomi og Politik

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Ekonomiska Samfundets Tidskrift

VOL. 4, NO. 4, 1951. *Stormarknaden, ett problem i den europeiska handelspolitiken :* D. HAMMARSKJÖLD. *Borgfredens facit—verklig eller blott skenbar stabilisering ? :* G. STJERNSCHANTZ. *Stabiliseringen—mer sken än verklighet :* N. MEINANDER. *Kommunernas ekonomiska självständighet i fara :* S. TÖRNQVIST.

Skandinaviska Banken Aktiebolag

VOL. XXXII, NO. 4, OCTOBER 1951. *Return to an Active Credit Policy :* P. JACOBSSON. *Centralized or Decentralized Wage Negotiations :* B. KUGELBERG. *The Redundant Supply of Money. The New Long-term Programme. The Economic Situation during the Third Quarter of 1951.*

Statisztikai Szemle. (*Hungarian Text*)

SEPTEMBER 1951. *Some Problems of the Mechanisation of Heavy and Laborious Operations :* I. RYZLOV and V. SHAFRANSKI. *The Measurement of Incomplete Production in Engineering Plants :* M. SPIRÓ. *The Rôle of Statistics in the Extension of the Working Methods of the State Control :* T. VARRÓ. *Training Agricultural Statisticians :* L. SZABÓ. *Experiences in Working Price Statistics Registered in the Second Quarter :* A. KÖVESDI.

OCTOBER 1951. *Communiqué of the Central Statistical Office on the Execution of the Enlarged Five Year Plan in the Third Quarter. The Organisation of Statistics in the Soviet Union :* G. PIKLER. *Some Questions on Accounting the Value of Production in the Building Industry :* L. LENGYEL. *The Calculation of Index Numbers of the Duration of the Production Cycle in Enterprises and their Analysis :* S. MEKHANIK. *Index Numbers of Livestock Reproduction Rates :* A. BRYANSKI.

NOVEMBER 1951. *The Concept of the "Balance of the National Economy" :* T. RYABUSHKIN. *Some Problems of the System of Decentralised Statistics :* A. NIKLAI. *The Calculation of the Profitability of Circulating Capital :* K. VÁRZEGI. *The Reactionary Character of Bourgeois Statistics on Crime :* S. OSTROUMOV. *Former Hungarian Industrial Statistics :* A. VÉRT. *Working Experience Leading towards the Improvement of the Economic Analysis of Statistical Data :* E. RESHETOV. *Analysis of the Systematisation of Statistics of Enterprises :* J. ADAMOVITS. *Statistics and Wage Control :* B. PRIGLY.

Probleme Economice (*Rumanian text*)

VOL. IV, NO. 9, SEPTEMBER 1951. *The Importance of the Works of Comrade Stalin on Linguistics for the Development of Economic Science :* K. OSTROVITYANOV. *The Great Construction Projects of Communism,*

Expressions of the Peaceful Policy of the U.S.S.R. : S. VALERIAN. *Cost Accounting and the Profitability of Socialist Enterprises* : M. MAEVSKY. *The Mobilisation of Internal Resources of Industrial Enterprises for Socialist Competition to Fulfil the 1951 Plan in Eleven Months* : C. BĂRBULESCU and S. FÜLÖP. *For a Better Utilisation of Basic Funds in the Electrotechnical Industry* : R. LAZĂR and G. SAON. *The Development of Local Industry and Co-operative Production in Cluj and the Proper Use of Local Resources* : A. NEGREA. *Two Years of Great Achievements in the Chinese People's Republic* : R. BERCA. *The British Economy under the Mark of Preparations for War* : I. ARABU.

VOL. IV, NO. 10, OCTOBER 1951. *The Replies of Comrade J. V. Stalin to Questions of a "Pravda" Correspondent on the Atomic Weapon. The Great October Socialist Revolution Opened the Way towards Socialism for Mankind. Base and Superstructure in the Transition Period from Socialism to Communism* : G. GLEZERMAN. *Lenin's Brilliant Analysis of the Last Stages of Capitalism* : L. STROJA. *Two Systems, Two Political Structures in International Economic Relations* : S. VERONA. *The Development of Marxist Teaching on Money, Credit and Banking under Capitalism in the Works of V. I. Lenin and J. V. Stalin* : N. CONSTANTINESCU. *A New Enlargement of the Tasks of the Czechoslovak Five Year Plan* : I. GOLDMANN. *The Utilisation of Energy Resources in the Electrification Plan* : I. SAFIR and T. ALBERT.

Finansi i Kredit (*Bulgarian text*)

NO. 1, JUNE 1951. *The Work of George Dimitrov Wins a Victory. Calculation of the Coefficient of Amortisation* : V. RANKOV. *Financing Short-term Credit to Agricultural Co-operatives* : T. DONCHEV.

NO. 2, AUGUST 1951. *The Victory of 10 September Opened the Way for Building Socialism in our Country. Our Financial Policy in the Transition Period from Capitalism to Socialism* : K. LAZAROV. *The Taxation System in the Bulgarian People's Republic* : KH. NIKOLOV. *Bank Control of Accounts* : K. KUZMANOV. *Budgetary Classification* : L. BODANOV.

Ekonomist (*Serbian text*)

VOL. IV, NO. 1, 1951. *Comrade Kidrič's Theses on the Economics of the Transition Period* : R. DAVIDOVIĆ. *Contemporary Economic Science in the U.S.S.R.* : R. UVALIĆ. *An attempt to Systematise the Data of the Organisation of Socialist Enterprises* : J. DAVIČO. *Some Problems of State Capitalism* : M. PEROVIĆ. *The Fundamental Lines of Keynes' Economic Theory* : R. STAMENKOVIĆ. *A Contribution to the Question of the Amortisation of Fixed Capital* : B. KRALJIĆ. *Certain Phenomena in the Transfer of State Functions to Direct Producers* : M. VUČKOVIĆ. *The Rôle of Soviet Foreign Trade in the Exploitation and Subjugation of Eastern European Countries* : V. MILENKOVIĆ. *Four Years of Progress in Serbian Local Industry* : D. HEISLER.

VOL. IV, NO. 2, 1951. *The New System of Circulation and Exchange of Goods* : N. ČOBELJIĆ. *Some Questions of Property during the Transition Period from Capitalism to Communism* : R. STOJANOVIĆ. *Alteration of Marxist Theory on Productive Forces and Productive Relationships* : I. TOPALOSKI. *The Trend of Nationalisation in Great Britain* : M. PEROVIĆ. *International Collaboration and Aid to Agriculture and in Agricultural Products* : S. KRAŠOVEC. *The Influence of Political Events on World Markets and on the Economic Life of Certain Countries* : V. MILENKOVIĆ.

VOL. IV, NOS. 3–4, 1951. *The Economic Nature of Food and Industrial Commodity Coupons* : N. ČOBELJIĆ and V. TRIČKOVIĆ. *Certain Problems of the Function of the Law of Value during the Transition Period* : M. PEROVIĆ. *A Contribution to the Theory of the Transition Period* : M. KORAĆ. *The Problem of the Organisation of Payments in the National Economy* : K. VASILJEVIĆ. *The Housing Situation in Certain Serbian Towns* : D. STEFANOVIĆ. *The New System of External Trade* : B.

MENAŠE. *Socialist Distribution of the Factors of Production:* V. NENADOVIĆ. *A Model of the Balance of Payments:* V. MAJHSNER. *A Contribution to the Study of Monopolies in the U.S.A.:* M. HUBENI. *British Agriculture:* A. STARC.

Voprosy Ekonomiki (Russian Text)

No. 9, 1951. *Construction of the Powerful Hydro-Electric Stations—a New Stage in the Development of Soviet Energetics:* B. MATVEEV. *Industrial Development in the Area of the Kakhovka Hydro-Electric Station and the South Ukrainian Canal:* L. GORELIK and G. ZHEREBKIN. *The Fishing Industry in the First Post-war Five Year Plan:* S. MIKHAILOV. *Finance, Money and Credit in the Service of the Economic Construction of the Chinese People's Republic:* B. BOLDYREV. *Right-Wing Socialists—Agents of American Aggression:* B. PONOMAREV. *The Occupation Politics of British and American Imperialism in Japan:* I. KOROBEYNIKOV and I. SHATALOV. *Leninist–Stalinist Teaching on Socialist Planning:* I. SHIRINSKI. *The Structure of Marx's "Capital":* A. PALTSEV.

No. 10, 1951. *Comrade Stalin's Answers to a "Pravda" Correspondent on the Atomic Weapon. The Great Constructions of Communism and the Distribution of the Productive Forces of the U.S.S.R.:* L. OPATSKI. *Complex Development of the Economy of the Ferghana Valley:* K. BEDRINTSEV. *The Economic Basis for Systems of Grassland Agriculture:* I. KANTYSHEV. *Opening up Trade Exchanges with the Chinese People's Republic:* B. GOGOL. *How the Armaments Race Affects the People in Capitalist Countries:* M. RUBENSTEIN. *The Remilitarisation of Western Germany is a Threat to Peace:* N. ZHUKOV. *Capital Investment by the U.S.A., an Instrument for the Subjection of Canada:* D. SEMIN.

No. 11, 1951. *The 34th Anniversary of the Great October Socialist Revolution: Speech by L. P. Beria at a Commemorative Session of the Moscow Soviet on 6 November 1951. The Lenin–Stalin Foreign Policy of the U.S.S.R. is the Policy of Peace:* G. DEBORIN. *Technical Progress in the National Economy of the U.S.S.R. in the Post-war Period:* A. OMAROVSKY. *Soviet Finance and Credit in the Service of the Construction of Communism:* A. BACHURIN. *Two Years of the Chinese People's Republic:* V. MASLENNIKOV. *The Budgets of Peaceful Economy in the European Popular Democracies:* I. DUDINSKY. *The Progress of Democratic Construction in the Viet Nam Republic:* T. NIKITIN.

Planovoe Khozyaistvo (Russian text)

No. 5, 1951. *Comrade Stalin's Answers to a "Pravda" Correspondent's Questions on the Atomic Weapon. For a Peace Pact. Problems of the Balance of the National Economy:* A. KURSKY. *Uniformity in the Work of Industrial Enterprises:* N. FEDOTOV. *On the Ways toward an Abundance of Food Products:* I. SIVOLAP. *For a Further Improvement in the Utilization of Automobile Transport:* A. TARANOV. *The Decay and Decline of the British Economy:* I. DVORKIN.

The Economic Studies Quarterly (In Japanese)

VOL. II, NO. 2, APRIL 1951. *The Nature and Significance of the Economic Vision:* I. NAKAYAMA. *Ethics of Competition—The Problem of Free Enterprise System by F. H. Knight:* H. AOYAMA. *A Theory of Consumption Quantity Index without the Assumption of Constant Preference Scale:* K. OHKAWA. *Views of Money and Types of Monetary Influence Analysis:* J. YAO. *A Growth Rate Theory of Investment in the Capital-Importing Country:* K. KITAGAWA. *A Visit with Mrs. J. A. Schumpeter:* S. TOBATA. *Econometric Researches relating to the Japanese Economy:* M. SHINOHARA.

VOL. II, NO. 3, JULY 1951. *Income Distribution by the Charlier's B-Type Frequency Curve:* M. HAYAKAWA. *On the Nation of Steady Rate of Growth:* H. KUMAGAI. *The Law of Capital and the Law of Dissipation of Profit:* K. YAMADA. *A General Theory of Consumer's Demand:* T. YOKOYAMA. *François Quesnay:* A. KUBOTA.

The Annals of the Hitotsubashi Academy (In English)

SUPPLEMENT No. 1, FEBRUARY 1951. *Lattice Equation as Logical Equation:* K. YAMADA. *Thermodynamical Method in Biology:* M. SUGITA. *Chemical Determination of Non-metallic Inclusions in Iron and Steel:* R. ISHII. *Study on the Palisade in Manchuria:* H. SATO.

VOL. 1, NO. 2, APRIL 1951. *Analysis of Post-war Problems in Japan. The Social Consciousness of the People in Post-war Japan:* Z. TAKASHIMA. *The Post-war Social Psychology of the Japanese People:* H. MINAMI. *The Over-Population Problem in Post-war Japan:* T. MINOGUCHI. *Measurements of Standards of Living of the Working Classes in Japan:* K. OHKAWA. *The Business Audit System in Japan:* E. FURUKAWA. *Some Problems on the Constitution of Japan:* J. TAGAMI. *The 1950 Amendment Act of the Business Corporation Law:* S. TANAKA. *Labor Legislation in Japan:* M. AZUMA.

The Economic Review (In Japanese)

VOL. II, NO. 3, JULY 1951. *Problem of the* Strukturwandel der Wirtschaft *of Germany in the Middle Ages and Professor Dopsch's Standpoint:* S. UYEHARA. *Measurement of Real Income:* K. OHKAWA. *Marx's Theory of the Falling Tendency of the Rate of Profit; a critique of critiques (English and Japanese):* S. TSURU. *The Structure of Japanese Wages:* C. TAKAHASHI and M. SHINOHARA.

NEW BOOKS

British

THE ACTON SOCIETY TRUST. Training and Promotion in Nationalised Industry. London: Allen and Unwin, 1951. 8½″. Pp. 138. 10*s.* 6*d.*

[This contains detailed descriptions of the training and promotion schemes in force in four recently nationalised industries—coal, gas, electricity and transport—with occasional reference to the experience of older established public undertakings such as the Post Office. Provision for training is concluded to be for the most part still in its infancy. The authors do not arrive at any general conclusion on promotion policy, but review the various means of reconciling the claims of merit and seniority and of establishing a system capable of eliminating suspicions of favouritism. They attach much importance to the size of the undertakings in determining the character of their personnel problems; it is to be hoped therefore that, in the more elaborate study of the question which the Acton Society is stated to have in preparation, the field will be extended to include some reference to the relevant experience of private businesses of comparable size here and in the United States.]

ARMYTAGE (W. H. G.). A. J. Mundella, 1825–1897. The Liberal Background to the Labour Movement. London: Ernest Benn, 1951. 8½″. Pp. 386. 30*s.*

[To be reviewed.]

BAREAU (P.). The City. Background to the News No. 2. London: The News Chronicle, 1951. 8½″. Pp. 46. 1*s.*

[A well-written and nicely illustrated popular account of the City of London and its activities. Mr. Bareau contrives to cover a surprisingly extensive field in his short space.]

Behind the Gallup Poll. With a detailed analysis of the 1951 General Election. London: The News Chronicle, 1951. 8½″. Pp. 32. 1*s.*

[An analysis of the 1951 election is preceded by a popular account of the working of the Gallup Poll. Among the topics covered are public reactions to various

election issues, composition of party following by age, sex and income groupings, and the reasons for the pronounced increase in Labour's support (which was apparently almost entirely at the expense of the Liberal party) between the announcement of the election date and polling day. Many interesting questions are raised, but fewer answered.]

BISSET (G. B.). and BLAGBURN (C. H.). Financial Results on Farms in the Southern Province in 1948/49 and in 1949/50. University of Reading Farm Management Survey Report No. 2. University of Reading, 1951. 10″. Pp. 36. 2*s*. 6*d*.

[Statistics of average value of net output and of different categories of cost are given for a sample of over 200 farms. Separate figures are given for financial results of dairy farms of small, medium and large size and of farms classed as cash-crop, livestock and mixed. These show dairy farms as the least profitable group, but it is suggested that this result may be partly due to the over-representation of small dairy farms in the sample.]

BLAGBURN (C. H.). Some Economic Aspects of Increasing Farm Output. University of Reading Miscellaneous Studies No. 6. University of Reading, 1951. 10″. Pp. 36. 5*s*.

[This is an interesting study based on data collected under the Farm Management Survey. Calculations are made of the cost on capital and current account involved in a given increase in the value of farm output at current prices. The relative costs are computed of increasing output by means of pursuing more intensive systems of farming and by means of increasing yields with a given intensity of farming system. It is found that by either of these means an increase in the value of output can be accomplished with a less than corresponding increase in cost, but that increasing yields is of the two the more economical procedure, especially in respect to capital expenditure, and especially if the increase required in the value of output is large.]

BROOKES (B. C.) and DICK (W. F. L.). Introduction to Statistical Method. London: William Heinemann, 1951. 8½″. Pp. viii + 288. 21*s*.

[To be reviewed.]

The Chartered Institute of Secretaries, 1891–1951. A Review of Sixty Years. London: The Chartered Institute of Secretaries, 1951. 9″. Pp. x + 206.

[Sir Edward Wilshaw, President of the Institute, writes in his foreword: "This domestic history has been written for two purposes: first, to place on permanent record facts about the Institute's early days and growth, while there are still direct personal links with them; and secondly, to tell more recent members something of the aspirations and achievements of those who founded the Institute and shaped its early course."]

CHESTER (D. N.). Central and Local Government. Financial and Administrative Relations. London: Macmillan, 1951. 8½″. Pp. ix + 421. 30*s*.

[To be reviewed.]

COLE (G. D. H.) and FILSON (A. W.). British Working Class Movements. Select Documents, 1789–1875. London: Macmillan, 1951. 9″. Pp. xxii + 628. 45*s*.

[To be reviewed.]

COOK (R. S.). Costs and Returns from Milk Production in the Southern Province in 1949–1950. University of Reading; Dept. of Agricultural Economics, 1951. 10½″. Pp. 29. 2*s*.

[This study, based on a sample of sixty farms, shows average cost per gallon of milk at 23·9*d*., with wide variations between farms, as compared with receipts of 34·6*d*. per gallon. The different cost categories analysed are food, labour,

depreciation and miscellaneous. A rise in cost of some 16%, mostly due to the increase in feeding costs, is shown in comparision with the results of a similar survey made two years earlier.]

DUE (J. F.). The General Manufacturers Sales Tax in Canada. Canadian Tax Papers No. 3. Toronto: Canadian Tax Foundation, 1951. 9″. Pp. xi + 202. $2.00.

[A detailed analysis of the history and present form of the tax, of its shifting and incidence and of its place in the Canadian tax structure. The author does not take a very favourable view of the tax, mainly on grounds of equity but also because of the tendency to pyramiding that results from its imposition at manufacturers' instead of retailers' level. It is suggested that the exemption of producers' goods from the tax could with advantage be pushed further than it is at present.]

EASTWOOD (T.). Industry in the Country Towns of Norfolk and Suffolk. London: Oxford University Press, 1951. 8½″. Pp. 63. 6*s*.

[To be reviewed.]

EVANS (D. H.). Horses on Farms Today. Loughborough: University of Nottingham School of Agriculture, 1951. 9½″. Pp. 22. 1*s*. 6*d*.

[This contains the results of a sample survey of horse labour and its cost in a number of farms in the East Midlands. The author discusses whether the steady decline in the use of horses that has been in evidence for the last forty or so years, and has been particularly marked since 1939, is likely to lead presently to their complete disappearance on farms. In his view horses can still be advantageously used on small farms; "a tractor and a horse may be a better combination than two tractors."]

FEDERATION OF BRITISH INDUSTRIES. The Effects of Inflation on Industrial Capital Resources; a case study. London: F.B.I., 1951. 8½″. Pp. 14.

[This very important short report analyses the effects of inflation and rising prices on the capital requirements and sources of finance of eighty typical industrial concerns. Their total fixed and current assets were £284 million in 1938 and £611 million in 1949. Including certain other assets, they have been able to increase the whole of their assets by about £360 million between 1938 and 1949. But £290 million of this was absorbed in keeping 1938 assets intact in a period of rising costs—£220 million for current assets and £70 million for fixed assets. Of the £360 million only about £200 million could be provided, after taxes and dividends had been met, by ploughing back profits—not enough to keep capital intact. The report shows in the clearest light the acute problems of industrial finance where so-called profits, resulting merely from higher valuations of stocks, are subject to heavy taxation.]

FINBERG (H. P. R.). Tavistock Abbey; a study in the social and economic history of Devon. Cambridge Studies in Medieval Life and Thought, New Series, Vol. 2. Cambridge University Press, 1951. 9″. Pp. viii + 320. 25*s*.

[To be reviewed.]

FOLLEY (R. R. W.). Economics of a Fruit Farm. A Guide to the Costs of Establishment and Operation of Commercial Apple Orchards. London: Oxford University Press (for the University of Oxford Agricultural Economics Research Institute), 1951. 8½″. Pp. xi + 103. 12*s*. 6*d*.

[Mr. Folley sets out the economic history of a single fruit farm which specialised in apples, from the initial planting in 1932 to the point, sixteen years later, when a steady income was being derived from the mature orchard. The book is divided into two parts, the first descriptive of the operations, the second containing the

graphical presentation of certain quantities and movements of value both to the economist and the intending fruit farmer. After planting, seven years elapsed before current revenue overhauled current expenditure; at the end of a further three years total revenue to that date was greater than total expenditure, both capital and current. The remainder of the period was taken up with making adjustments to the composition of the orchard in face of changing consumer requirements. By 1947 these adjustments had been completed, and in the last two years revenue was £143 per fruit acre as compared to operating expenses of £67. All items of expenditure and revenue for the whole period are dealt with exhaustively in Part I, and provide an interesting analysis of a subject on which there is comparatively little factual data readily available, viz.: the cost of establishing and operating an orchard. While the wealth of detail makes it possible to adjust the costs for other circumstances, yet the large number of variable factors involved and the size of the sample must demand the utmost caution in so using these figures. However, in the text attempts have been made to adjust capital requirements to current prices. Despite this reservation, the book, especially the quantitative data in Part II, will be of interest to anyone studying the economics of fruit farming.]

FORD (P.) and FORD (G.). A Breviate of Parliamentary Papers, 1917–1939. Oxford: Basil Blackwell, 1951. 10″. Pp. xlviii + 571. 52*s*. 6*d*.

[To be reviewed.]

GODLEY (G.). The Master Forger: the story of Han van Meegeren. London: Home and Van Thal, 1951. 8″. Pp. 223. 9*s*. 6*d*.

[Here is a book which at first glance is infinitely remote from economics. But any teacher of economics who has to lecture on the theory of value will derive not only immense private enjoyment from reading it, but also some fascinating examples and problems for his lectures. The story of Han van Meegeren is already well known. Starting, it would seem, with a hoax, to get his own back on the experts, he ended by perpetrating one of the greatest series of frauds in the history of art. Eight of his forged "Vermeers" were sold for a total of over £750,000. Marshall Goering contributed £165,000 for one picture, *Christ and the Adultress*, and it was the discovery of this unknown work and the exploration of its provenance which led ultimately to van Meegeren's exposure and downfall. But what was it that made those beautiful and remarkable pictures infinitely valuable so long as Vermeer was their supposed painter, and almost valueless when it became known that the artist was only Van Meegeren? And what of the damages claimed against his estate: the claims of the Dutch State to share in the proceeds of his crime, if crime it was; the claims of purchasers to have been defrauded? If a jury of economic theorists were assembled to assess the damages to the world, who would they hold that it was who did the damage? The artist who added to the beautiful things of the world? The snooping inspectors who destroyed the illusion, and dethroned the *Christ at Emmaus* from its proud position as one of the greatest treasures of the Dutch nation?]

GREENBERG (M). British Trade and the Opening of China, 1800–42. Cambridge Studies in Economic History. Cambridge University Press, 1951. 8½″. Pp. xii + 238. 21*s*.

[To be reviewed.]

HOLMSTROM (J. E.). Facts, Files and Action in Business and Public Affairs. Part I: Sources and Backgrounds of Facts. London: Chapman and Hall, 1951. 8½″. Pp. xvi + 449. 36*s*.

[To be reviewed.]

THE INSTITUTE OF PUBLIC ADMINISTRATION. The Health Services; some of their practical problems. With an introduction by Henry Lesser, C.B.E. London: Allen and Unwin, 1951. 8½″. Pp. 136. 10*s*. 6*d*.

[To be reviewed.]

INTERNATIONAL ECONOMIC ASSOCIATION. International Economic Papers No. 1. Edited by A. T. Peacock, H. S. Houthakker, R. Turvey, F. A. Lutz and Elizabeth Henderson. London: Macmillan (New York: The Macmillan Co.), 1951. 10″. Pp. 244. 15*s*.

[Reviewed in this issue.]

JOINT COMMITTEE OF THE INSTITUTE OF COST AND WORKS ACCOUNTANTS AND THE INSTITUTION OF PRODUCTION ENGINEERS. Measurement of Productivity; applications and limitations. London: Gee, 1951. 9″. Pp. 23. 2*s*.

[Alternative measures of productivity are discussed, and some doubts are voiced as to the value of any overall measure. It is suggested that for the purposes of the individual firm, research can often be more fruitfully directed to such tasks as the construction of adequate statistics on machine utilisation, and to the study of the best means of presenting information at the supervisory level. Appendices deal with the latter two questions at great length.]

JOUVENEL (B. DE). The Ethics of Redistribution. Cambridge University Press, 1951. 7½″. Pp. ix + 91. 8*s*. 6*d*.

[To be reviewed.]

KERR (A. M.). Personal Income of Western Australia. Crawley, W. Australia: The University of Western Australia Text Books Board, 1951. 10″. Pp. x + 107. 7*s*. 6*d*.

[Personal incomes in Western Australia are reckoned to comprise over 97% of total community income in the State. The calculations made by Mr. Kerr cover the years from 1941–42 to 1947–48, and preliminary estimates for the two subsequent years are given in a postscript.]

KURIHARA (K. K.). Monetary Theory and Public Policy. London: Allen and Unwin, 1951. 8½″. Pp. xiv + 393. 30*s*.

[To be reviewed.]

KYKKOTIS (I.) and CORNER (C. M.). Greek–English Bilingual Economics Reader. London: Zeno Booksellers, 1951. 7½″. Pp. ix + 106. 10*s*. 6*d*.

[This small book is designed to help those who wish quickly to acquire enough Greek to read documents dealing with public finance, banking or other economic issues. It begins with a list of technical terms in Greek and in English. It goes on to short phrases in common use in the contexts with which it is concerned, and thence to longer sentences; throughout the Greek and its English equivalent are given on opposite pages. Further sections deal with idiomatic expressions, with Greek methods of word-building and with sentence structure. An index of English words and a vocabulary of Greek words complete the book. It should be of real help to many Englishmen who start with a fair knowledge of ancient Greek and may care to learn enough modern Greek to read the journals and newspapers. Some of these ex-classics may be amused to try their rusty skill in Greek Unseens upon the following example from this book: *Ἡ ἰσοσκέλισις τοῦ προϋπολογισμοῦ ἐβασίσθη εἰς τὴν αὐξησιν τοῦ ἐκ τῆς ἐμμέσου φορολογίας ἐσόδου.*]

LEVY (H.). Drink; an economic and social study. London: Routledge and Kegan Paul, 1951. 8½″. Pp. vii + 256. 21*s*.

[To be reviewed.]

MALTHUS (T. R.). Principles of Political Economy. Enlarged second edition. Oxford: Basil Blackwell (New York: Augustus Kelley), 1951. 8½″. Pp. liv + 446. 37*s*. 6*d*.

[This is a good mechanical reproduction of Pickering's edition of 1836, with the biographical memoir of Malthus by Bishop Otter. The date of the original edition should however have been stated in the book (and not merely on the dust jacket which is to be thrown away), as well as the name of the author of the anonymous

memoir and that of the original publisher. The volume, in its general appearance and binding, is almost indistinguishable from the reprint published by the London School of Economics in 1936 at 10*s.* 6*d.*, except for the price which is over three and a half times as high.]

MARX (K.) Theories of Surplus Value. Selections. Translated from the German by G. A. Bonner and Emile Burns. London: Lawrence and Wishart, 1951. 8½″. Pp. 432. 25*s.*

[To be reviewed.]

MILLER (E.). The Abbey and Bishopric of Ely; the social history of an Ecclesiastical Estate from the tenth century to the early fourteenth century. Cambridge Studies in Medieval Life and Thought, New Series, Vol. I. Cambridge University Press, 1951. 9″. Pp. xii + 313. 25*s.*

[To be reviewed.]

MORONEY (M. J.). Facts from Figures. Harmondsworth, Middx.: Penguin Books, 1951. 7½″. Pp. viii + 472. 5*s.*

[To be reviewed.]

NATIONAL COAL BOARD. At the Root of It All. London: National Coal Board, 1951. 9½″. Pp. 32.

[This admirably produced and profusely illustrated pamphlet on coal and its uses is addressed to a popular audience. It should be particularly suited for use in schools.]

OXLEY (V. J.). Local Government Financial Statistics. A Guide to Published Statistical Information Relating to the Finances of Local Authorities in England and Wales. London: Allen and Unwin (for the Institute of Public Administration), 1951. 7½″. Pp. viii + 96. 7*s.* 6*d.*

[This useful work describes the official, semi-official and other sources of statistical material relating to the financial aspects of different local government activities, and the nature of the information available under each head. While regretting the lack of uniformity in the statistics prepared by different authorities, the author does not favour the suggestion that the task of collecting and publishing local government statistics should be transferred to a central bureau.]

DU PLESSIS (J. C.). Economic Fluctuations in South Africa, 1910–1949. Stellenbosch: Bureau for Economic Research, 1950. 9½″. Pp. 75. 18*s.* 6*d.*

[This volume brings together and discusses, with copious use of charts, an extensive range of monthly statistical data relating to the growth and fluctuations of the South African economy over the last forty years. The treatment adopted is similar to that familiar from publications of the National Bureau of Economic Research, emphasis being placed on questions of measurement and on the separation of trend from cyclical movement. This will be an indispensable work of reference to students of the subject.]

Productivity Report. Education for Management. London and New York: Anglo-American Council on Productivity, 1951. 10″. Pp. xii + 86. 4*s.* 6*d.*

[To be reviewed.]

ROBBINS (L.). The Balance of Payments. The Stamp Memorial Lecture, 1951. London: Athlone Press, 1951. 8½″. Pp. 32. 2*s.*

[In this lecture Prof. Robbins castigates the follies of those who appear to believe that it is simultaneously possible to pursue domestic policies of an inflationary character, external policies that assume a fixed exchange rate of the pound and (though he does not explicitly add this element) commercial policies of

liberalising trade. He begins by going back to the fundamentals of the classical doctrines and argues that, while they assumed that direct interventions in balance-of-payment matters was undesirable, that was because they also assumed that internal currency and banking policies and internal budgetary policies created a sound basic relation to the external situation. He goes on to argue that, "given a fixed rate of exchange, there is always a level of internal prices at which the balance of payments would tend to equilibrium. It follows, therefore, that if there is disequilibrium, for any long period of time, this ideal level has been missed." At this point his critics may well argue that there is not one possible method of reaching equilibrium, but many, and that these are all different compromises between a change in the volume of internal incomes and a change in the proportion of incomes that will be spent on imports; that economic policy consists in choosing between these alternatives. Prof. Robbins' critics would probably emphasise, as vigorously as he does himself, the need to avoid inflation. But they would not necessarily concede that, if Prof. Robbins is right in rejecting, as he does, a fluctuating exchange rate as a method of affecting the propensities to import and export of a nation that seeks to be a world banker, he is also right in neglecting direct control of imports as a means of maximising the combined results of internal activity and the international division of labour. It is not easy to be sure, within the necessary compression of a short lecture, how far Prof. Robbins is concentrating, as a phrase in the quotation above might suggest, mainly upon the long-term issues and objectives, and deliberately playing down these short-term, but none-the-less important, considerations affecting policy.]

ROBINSON (JOAN). Collected Economic Papers. Oxford: Basil Blackwell, 1951. 8½". Pp. xii + 236. 21*s*.

[To be reviewed.]

RURAL RECONSTRUCTION ASSOCIATION. Progress Report I. London: Rural Economy (Publications) Ltd., 1951. 13½". Pp. 23. 2*s*. 6*d*.

[An estimate of the acreage that would be needed to produce the nation's food requirements is set against the published calculations of Dr. Dudley Stamp relating to the amounts of land of different qualities available for agricultural purposes in Great Britain. It is reckoned that if all the land reckoned by Dr. Stamp as available were utilised, an increase in average yield per acre of 39¼% would be required to provide for nutrition at 1946 level.]

SELF (SIR HENRY). Problems of Decentralization in a large Scale Undertaking. The Organization of the Central Authority and Area Boards of the Electricity Supply Industry. London: British Institute of Management, 1951. 9". Pp. 47. 2*s*. 6*d*.

[A discussion of the problem of regional autonomy in the electricity supply industry as it concerns the Area Boards both within their own organisation and in their relations with the Central Authority.]

SRAFFA (P.) (Ed.) (with the collaboration of M. H. DOBB). The Works and Correspondence of David Ricardo. Vol. III. *Pamphlets and Papers, 1809–1811*. Pp. viii + 437. Vol. IV. *Pamphlets and Papers, 1815–1823*. Pp. vi + 422. Cambridge University Press (for the Royal Economic Society), 1951. 9". 24*s*. each.

[To be reviewed.]

STERNBERG (F.). Capitalism and Socialism on Trial. London: Gollancz, 1951. 8½". Pp. 603. 25*s*.

[To be reviewed.]

STUVEL (G.). The Exchange Stability Problem. Oxford: Basil Blackwell, 1951. 9". Pp. viii + 242. 21*s*.

[To be reviewed.]

TINBERGEN (J.). Econometrics. London: Allen and Unwin, 1951. 9½". Pp. xii + 258. 36*s*.

[To be reviewed.]

THE UNIVERSITY OF BIRMINGHAM. Studies in Economics and Society. Monograph A 1: *Incentives and Work Analysis*. By W. Baldamus. Pp. 78. Monograph A 2: *Labour Turnover Under Full Employment*. By Joyce R. Long. Pp. iii + 134. Monograph A 3: *Absence Under Full Employment*. By Hilde Behrend. Pp. ii + 137. The University of Birmingham, 1951. 10". 15*s*. each volume.

[To be reviewed.]

THE UNIVERSITY OF LIVERPOOL Department of Social Science. Social Aspects of a Town Development Plan. A Study of the County Borough of Dudley. Liverpool: The University Press, 1951. 8½". Pp. 168. 7*s*. 6*d*.

[To be reviewed.]

Indian

Annual Market Review, 1950. Bombay: Premchand Roychand, 1951. 10". Pp. 79.

[A useful source both of statistical information and of appraisals of current trends in many different sectors of the Indian economy.]

GANDHI (M. P.) (Ed.). The Cotton Textile Industry 1950 Annual. Bombay: Gandhi, 1951. 10". Pp. lxxx + 133. Rs. 7–8.

[The year 1950 was a difficult one for the Indian cotton textile industry. A protracted strike was added to the troubles of the supply of cotton. With a small crop and complete stoppage of supplies from Pakistan, it is estimated that 1950 output may not have been more than 3,700 million yards, against 4,319 million in 1948. Since more than 1,000 million yards have been exported, the Indian consumer has gone seriously short.]

LAKDAWALA (D. T.). International Aspects of Indian Economic Development. University of Bombay Publications, Economic Series No. 5. Bombay: Oxford University Press, 1952. 8½". Pp. vi + 191. 14*s*.

[Dr. Lakdawala, who is Reader in Economics in the University of Bombay, begins by assessing the pace of Indian economic development. He demonstrates the inadequacy of income per head and the need for national income to grow at something close to 4% per annum if it is to keep up with the population and provide a relatively modest increase in real standards. The essential needs for the achievement of such progress are technical knowledge and capital. It is with the problems of foreign capital supply, of the transfer problems involved, with the availability of the capital and with exchange and trade policies that this book is primarily concerned. It provides a rigorous economic analysis of the effects of alternative policies. Of particular interest is a discussion of the desirable ratio of foreign to home capital supplies, and the relevance, if any, to this of the uses to which the capital will be put. As Prof. Vakil stresses in his foreword, this is a field in which analysis of the experience of other countries and an appeal to first principles, such as Dr. Lakdawala has made, can do much to blow clear the cobwebs of emotionalism which have surrounded it.]

NATARAJAN (B.). Food and Agriculture in Madras State. Madras: Director of Information and Publicity, 1951. 8½". Pp. xxi + 257. R. 1.

[To be reviewed.]

RESERVE BANK OF INDIA. Consolidation of Holdings. Bombay: K. Sarvothama Rao (for the Reserve Bank of India), 1951. 8½". Pp. 35. 8 as.

[This pamphlet suggests that pilot schemes be undertaken in carefully selected areas and that such areas be given preference in the schemes of rural development; that consolidation be undertaken wherever half the land-owners owning half the area agree; that minimum areas be prescribed into which land can in future be sub-divided.]

RESERVE BANK OF INDIA. Fruit Marketing Co-operatives. Bombay: K. Sarvothama Rao (for the Reserve Bank of India), 1951. 8½". Pp. 70. 8 as.

[This gives an account of fruit marketing Co-operatives in different European, American and other fruit-growing areas and stresses the backwardness of India in this respect. It describes the various Indian experiments and indicates lines of development which might be tried.]

American

BENEDICT (M. R.). Food and Feed Reserves. Planning Pamphlets No. 76. Washington: National Planning Association, 1951. 7½". Pp. iv + 48. 50 c.

[U.S. stock-piling and storage policy are considered in the light of the history of agricultural production and consumption in recent years. The author emphasises the danger of allowing the rate of stock-piling to be determined mainly with reference to the exigencies of farm price-support policy.]

BEZANSON (ANNE) and Others. Price and Inflation during the American Revolution; Pennsylvania, 1770–1790. Research Studies No. XXXV. Philadelphia: University of Pennsylvania Press, 1951. 9½". Pp. xvi + 362. $6.75.

[The main purpose of this work is to present a continuous series of *monthly* price quotations for twenty-four commodities in Pennsylvania for the years 1770–90. In the absence of newspaper market reports for the period 1775–84, the figures for these years have been compiled with immense pains entirely from the surviving letters and account books of merchants—a truly remarkable achievement. In addition to tracing the course of individual commodity prices, the authors devote chapters to general analysis of the inflationary process during the American Revolution as illuminated by the price figures and by the comments of merchants in their correspondence.]

THE BROOKINGS INSTITUTION. Major Problems of United States Foreign Policy, 1951–1952. Washington: The Brookings Institution, 1951. 9". Pp. xiv + 479. Paper bound $1.50; cloth bound $3.00.

[To be reviewed.]

Conference on Business Cycles held under the auspices of Universities–National Bureau Committee for Economic Research. New York: National Bureau of Economic Research, 1951. 9". Pp. xii + 433. $6.00.

[To be reviewed.]

COOK (F. H.). Principles of Business and the Federal Law. New York and London: Macmillan, 1951. 9½". Pp. xxi + 563. 42*s*.

[This is a text-book setting forth the application of U.S. constitutional law and of federal legislation to the operation of business, with extensive reference to the relevant case histories.]

COWLES COMMISSION FOR RESEARCH IN ECONOMICS. Rational Decision-Making and Economic Behaviour. 19th Annual Report, July 1st 1950–June 30th 1951. The University of Chicago, 1951. 9″. Pp. 65.

[An account of the Cowles Commission's activities during the year, with emphasis on the study of rational decision-making as the connecting thread running through much of its recent work.]

DUKE UNIVERSITY SCHOOL OF LAW. Law and Contemporary Problems. The Nationalization of British Industries. Durham, North Carolina: Duke University School of Law, 1951. 10½″. Pp. 196. $1.50.

[Among the topics discussed in articles in this issue of *Law and Contemporary Problems* are selection and training for management, labour relations, finance and parliamentary control in nationalised industries in Great Britain.]

HERZ (J. H.). Political Realism and Political Idealism. University of Chicago Press (London: Cambridge University Press), 1951. 8½″. Pp. xii + 275. 28*s*.

[The author begins this "typology of political thinking," as he describes his book, with an antithesis ("unmitigated, power-glorifying, force-obsessed Political Realism" *vs.* "utopian Political Idealism"), and works pedantically towards a synthesis ("discriminating Realist Liberalism"). He announces at the outset: "What interests us primarily here is not the 'individualistic,' or, better, the characterological side of the human mind." His disinterest in anything human and personal will be obvious to his readers. What does occupy his interest is a wasteland peopled with personified abstractions, such as: integral nationalism, pacifist internationalism, statism, activism, plebiscitarian autocracy, integral democracy, corporate oligarchism. A section entitled "*Laissez-faire* and Planned Economy" is in keeping with the rest of the book.]

JABLOW (J.). The Cheyenne in Plains Indian Trade Relations 1795–1840. Monographs of the American Ethnological Society No. XIX. New York: J. J. Augustin, 1951. 9½″. Pp. ix + 100. $2.50.

[This study of the Cheyenne has as its central theme the influence exerted by trade, especially trade in horses, on the relations of friendship or hostility subsisting between the different Indian tribes of the Great Plains.]

MIGHELL (R. L.) and BLACK (J. D.). Interregional Competition in Agriculture with special reference to Dairy Farming in the Lake States and New England. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1951. 8½″. Pp. xiv + 320. 32*s*. 6*d*.

[To be reviewed.]

Money, Trade, and Economic Growth. In Honor of John Henry Williams. New York and London: Macmillan, 1951. 9½″. Pp. xi + 343. 37*s*. 6*d*.

[To be reviewed.]

MUDGETT (B. D.). Index Numbers. New York: John Wiley (London: Chapman and Hall), 1951. 9″. Pp. x + 135. 24*s*.

[To be reviewed.]

ZALEZNIK (A.). Foreman Training in a Growing Enterprise. Boston: Harvard Business School, 1951. 8½″. Pp. xv + 232. $3.50.

[Professor Zaleznik's book is based on personal observation in a fairly large and rapidly expanding firm in the electrical engineering industry. The author starts with a description of the training conferences organised by the management for employees of supervisory grade, and then passes on to analysis of the case history of an individual foreman, "Tony." It soon becomes apparent that the training conferences completely failed to help Tony to overcome the difficulties ex-

perienced on his production line, and indeed may have hindered him from doing so by encouraging him to think in terms of oversimplified generalities. The conference leaders were mainly concerned with "pep-talk" and the exposition of platitudinous generalities; doubts and questions raised by trainees on the basis of their own work experience were commonly brushed aside. The author's conclusion is that training will be effective only if those responsible have clear from the start—as they did not have in the case studied—what are the specific problems uppermost in foremen's minds, and address their instruction to these problems. The procedure of enunciating general principles and hoping that somehow they will be translated into action is doomed to failure. Professor Zaleznik approaches his subject with great *élan*, and a high standard of readability is maintained throughout.]

Latin American

BANCO DO BRASIL S.A. Relatório de 1950. Rio de Janeiro: Rodrigues, 1951. 9½". Pp. 227.

[In addition to a survey of the activities of the Bank during 1950, this report contains an extensive collection of statistics relating to the Brazilian economy in general and its development during recent years.]

JUNTA NACIONAL DE ECONOMÍA DE LA REPÚBLICA DE CUBA. El Acuerdo de Ginebra sobre Aranceles y Comercio. Estudios e Investigaciones Económicas No. 7. Havana: Junta Nacional de Economía, 1950. 8½". Pp. xxiii + 224.

[A collection of documents and essays on international economic relations.]

JUNTA NACIONAL DE ECONOMÍA DE LA REPÚBLICA DE CUBA. Política Económica de Emergencia. Estudios e Investigaciones Económicas No. 10. Havana: Junta Nacional de Economía, 1951. 8½". Pp. xiv + 194.

[A symposium of statements by a number of Cuban economists and politicians on the economic problems of defence.]

POSSE (J. A.). Servicios de Utilización Común; su régimen. Buenos Aires: El Ateneo, 1951. 10½". Pp. 265.

[The author, who is an engineer, considers the types of industry where public ownership or control is likely to be desirable and analyses the forms which this control may take. A large part of the book is occupied by discussion of the experience of state enterprise in different countries in Europe and Latin America.]

REYES (J. E. DE LOS). Relaciones Económicas entre México y Estados Unidos, 1870–1910. México, D.F.: Nacional Financiera, S.A., 1951. 9". Pp. 189.

[The author of this study is economist in the Department of Financial Studies of the Nacional Financiera.]

UROSA (J. A. y.). Caracteristicas Fundamentales de la Economía Cubana. Havana: Banco Nacional de Cuba, 1950. 10½". Pp. xiv + 405.

[An interesting and serious attempt to apply some of the techniques of econometrics and of theoretical analysis to the practical problems of Cuba.]

French

JAMES (E.) and MARCHAL (A.) (Eds.). La monnaie. Analyse des théories de A. AFTALION, J. W. ANGELL, R. G. HAWTREY, J. M. KEYNES, A. W. MARGET, L. MISES, B. NOGARO, C. RIST, D. H. ROBERTSON et J. SCHUMPETER. L'Ecole de Stockholm. La monnaie en

U.R.S.S. La théorie économique du temps présent. Collection fondée par B. Nogaro. Paris: Domat Montchrestien, 1952. 7½". Pp. 498.

[To be reviewed.]

SIEGFRIED (A.). Voyage aux Indes. Paris: Librairie Armand Colin, 1951. 7½". Pp. 160.

[In this little book, M. Siegfried has collected a number of articles which he wrote for *Le Figaro* on his visit to India and Pakistan between October and December 1950. He has provided a semi-philosophical travelogue together with some reflections on his earlier visit in 1900. M. Siegfried is well aware of the dangers of broad generalisation, but is hardly able to avoid falling into them in this necessarily rather slight work. The book is, however, easy to read and there are many shrewd and pertinent observations. In one of the passages (there are not many) dealing with economic affairs, he remarks on the greater competence generally shown by Indians in the conduct of small and medium-size rather than large industrial establishments. If this is so, it is perhaps an additional reason for using the smaller establishment in the process of industrialisation in the region.]

WALINE (P.). Les Syndicats aux États-Unis. Leur force et leur originalité. Paris: Librairie Armand Colin, 1951. 9½". Pp. 191.

[This is a compact and painstaking account of the American trade unions. It also includes a brief description of the organisations of management. The bases and structure of the labour organisations and the characteristics of their leadership are examined. Judgments which are made about a society as complex and energetic as the United States refer, as M. Waline points out, to what is always a passing scene. Yet as he shows, labour and management share deeply rooted principles and attitudes. An outstanding instance of this is the way in which both appear to include in their reckoning the conception of an expanding free-enterprise economy. M. Waline treats his subject with care and detachment. He draws attention to the originality of the American trade union which has arisen out of American conditions and grown in conformity with the nature of the country and its traditions.]

Belgian

MELNYK (M.). Les Ouvriers étrangers en Belgique. Louvain: Institut de Recherches Économiques et Sociales, 1951. 9½". Pp. 183.

[This is an interesting study of foreign labour in Belgium, where it seems that the problems are not dissimilar from those in Britain. An increasing proportion of the immigrants has been coming from low-income countries such as Italy. They have mostly been absorbed into the coal-mining industry, which has ceased to attract enough Belgian labour. The substantial influx of foreign workers has been largely offset by emigration, so that Belgium has had only a small net immigration. The statistics of national income which are quoted on page 37 are not clearly explained; they cannot, as is suggested, all be in constant prices, since this would imply that Belgium's real national income in 1946 was over three times the 1938 figure, which is clearly untrue. The usefulness of some of the graphs is impaired by poor printing of figures. M. Melnyk's study is useful and instructive, although there are passages where the reader feels the lack of more exhaustive study of the significant points which he raises.]

German

ARNIM (W. v.). Die Landwirtschaft Dänemarks als Beispiel intensiver Betriebsgestaltung bei starker weltwirtschaftlicher Verflechtung. Kieler Studien No. 17. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1951. 8½". Pp. viii + 107. DM. 8.

[This is a continuation of the author's earlier study on the post-war problems of the Danish economy published as No. 9 of the same series. It concentrates on a

detailed description of the structural changes in Danish agriculture brought about by changing market conditions. Of particular interest is the discussion of cultural and educational influences on Danish farming. The author maintains that these influences largely account for the remarkable adaptability of the Danish farming community to continual changes in export demand.]

BISMARCK-OSTEN (F. v.). Strukturwandlungen und Nachkriegsprobleme der türkischen Volkswirtschaft. Kieler Studien No. 16. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1951. 8½″. Pp. vi + 104. DM. 7.50.

[Another of the Kiel series which is concerned with the post-war economic problems of Turkey. Again a large amount of statistical material is culled from the publications of the various international organisations. There is a fairly full discussion of the possibilities of wider European co-operation with Turkey in respect of the latter's economic development.]

MUZIOL (R.). Die Nachkriegsentwicklung des englischen Aussenhandels. Kieler Studien No. 5. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1951. 8½″. Pp. 70. DM. 4.50.

[One of the series published by the *Institut für Weltwirtschaft*, Kiel University. The author surveys the developments in Britain's international trade from 1945 to 1950. Most of the material is collected from sources familiar to the British economist, but it is well assembled. A particular feature of the study is the short discussion of the potential competition between Britain and Germany in respect of machinery and vehicles exports. Dr. Muziol maintains that the potential world demand for these goods is so great that fears of cut-throat competition are exaggerated.]

PFEIL (ELIZABETH). Grossstadtforschung. Fragestellungen, Verfahrensweisen und Ergebnisse einer Wissenschaft, die dem Neubau von Stadt und Land von Nutzen sein könnte. Bremen: Walter Dorn, 1950. 9½″. Pp. 272. DM. 8.

[Volume 19 of a series of studies on location and land planning. It may be described as a German version of the approach to the study of town life associated with the names of Geddes and Mumford; although, curiously enough, Geddes is not mentioned in the mammoth bibliography. The first part of the study outlines the development of the studies of town life. The second considers the methodological problems of these studies, and particularly those of the sociologist.]

Probleme des Schuman-Plans. A Discussion between W. HALLSTEIN, A. PREDÖHL and F. BAADE. Kieler Vorträge Neu Folge No. 2. Kiel: Institut für Weltwirtschaft an der Universität Kiel, 1951. Pp. 34. DM. 2.

[A public lecture on the Schumann Plan given by an official of the German Foreign Office followed by a discussion between the lecturer and Professors Predöhl and Baade.]

Austrian

NEMSCHAK (F.). Approach to a Comprehensive Concept of Economic Policy. Revision of the present economic policy under the aspect of raising the level of productivity. Vienna: Austrian Institute for Economic Research, 1951. 12″. Pp. 33.

[A review of current problems of economic policy in Austria. Dr. Nemschak is critical of the policies pursued in recent years, which he considers to have been lacking in general guiding principles and to have been shaped too largely by the pressure of sectional interest groups.]

Swiss

NIEHANS (J.). Ausgleichsgesetze der Amerikanischen Zahlungsbilanz. Von der Allgemeinen Preistheorie zur Quantitativen Voraussage. Berne: A. Francke, 1951. 9½". Pp. x + 173. *S.fr.* 9·50.

[The author has set himself the ambitious task of determining certain "laws" governing the movements in the American balance of payments. In the first part of the work it is significant that, in a long and well-documented discussion of the theory of international trade, he concentrates much more attention on the influence of price elasticities of imports and exports than on income elasticities. The second part of the work makes an attempt at calculating the price elasticities, both short and long period, for American imports, and quotes American sources for figures of the relation between the level of national income and imports over the period 1930–48. The so-called laws deduced from this analysis turn out to be rather imprecise statements about the probable effects on the American balance of payments of changes in import prices, tariff structure and exchange rates. Nevertheless, as a survey of theoretical discussion on the dollar problem this work has distinct merit. Its familiarity with the technical jargon of Anglo-Saxon economics makes it easy reading.]

SENGLET (J. J.). Die Preispolitik der Schweiz während des ersten Weltkrieges. Staatswissenschaftliche Studien Neue Folge No. 5. Berne: A. Francke, 1950. 9". Pp. 298. *S.fr.* 18.

[This is the fifth of a series of studies, mainly concerning the Swiss economy. It is a most exhaustive account of the methods and results of Swiss official price control during the First World War which is designed to give food for thought to politicians and economists considering anti-inflationary measures. Some interesting comparisons between the Swiss and German practices during the Second World War are also made, and the sections on the Swiss attempt at regional price control give some very useful examples for the teacher of price theory. There is also a detailed bibliography of Continental literature on the theory and practice of price control.]

Dutch

EDDING (F.). The Refugees as a Burden, a Stimulus and a Challenge to the West German Economy. Publications of the Research Group for European Migration Problems No. 4. (Kieler Studien No. 12.) The Hague: Nijhoff, 1951. 9½". Pp. xii + 53. G. 3.50.

[A general discussion of the economic and social consequences of the forced migration of refugees into Western Germany from the east, and of the conditions necessary to ensure their absorption into the West German economy. The author emphasises that the age composition of the refugee population destroys the possibility of large-scale relief by emigration.]

Italian

DE LUCA (M.). Di alcuni moderni aspetti della teoria e della politica dei traffici internazionali. Studi di economia e statistica, series I, Vol. I. Università di Catania, 1950–51. 9½". Pp. 94.

[The relation between external equilibrium or foreign balance and internal equilibrium or full employment in the light of Keynesian and post-Keynesian theories.]

DE LUCA (M.). La "diffusione" dei costi di produzione. Naples: A. Morano, 1950. 8½". Pp. 100. L. 500.

[A study of the methods by which the burden of "costs of production" is transferred from the shoulders of those upon whom free competition would place it to others; in particular by state action, through tax exemptions, differential transport or power-rates, allotment of raw materials, multiple exchange rates, etc.]

MIANI-CALABRESE (D.). Una interpretazione psico-demografica del Pentateuco. Pisa and Rome: Vallerini, 1951. 10". Pp. 198 + 3 Tables. L. 1500.

[This "psycho-demographic interpretation of the Pentateuch" is published under the auspices of the Italian Society of Economics, Demography and Statistics, and it is commended by the President of the Society in his preface.]

Hungarian

The Trial of József Grösz and His Accomplices. Budapest: The State Publishing House (London: Hungarian News and Information Service), 1951. 8". Pp. 411.

[A verbatim account of this trial, like those of Rajk and Kostov, is now made available in English. One's main impression in reading it is perhaps that the purpose of the trial was less to establish the guilt of the individuals accused of endeavouring to overthrow the régime than to arraign the Vatican and the United States as the prime movers of these endeavours.]

Greek

CONSTANTACATOS (M. E.). Money and Prices: as viewed from Actual Money Supply in the United States of America from 1800 to 1940 and Optimum Money Supply in the Long Run. An Essay in Interpretation. Athens: M. E. Constantacatos, 1951. 10". Pp. 90.

[This is designed as an empirical verification of a thesis whose logical foundations were more fully set forth in a Greek publication of the same author entitled Χρῆμα καὶ Νόμος. The central doctrine is that the optimum rate of growth of the money supply is determined by the rate of population growth and the average length of human life, and by these alone. Fluctuations in prices are the result of deviations of the actual money supply from the optimum supply so defined.]

Egyptian

JACOBSSON (P.). Monetary Improvements in Europe and Problems of a Return to Convertibility. National Bank of Egypt Fiftieth Anniversary Commemoration Lectures. Cairo: National Bank of Egypt, 1950. 9½". Pp. 47.

[In these lectures Dr. Jacobsson reviews the conditions necessary for the restoration of the convertibility of sterling and other European currencies, and emphasises the importance of restrictive credit policies such as have been pursued in Switzerland and in Belgium as means towards attaining this end.]

Official

BRITISH

BENHAM (F.). The National Income of Malaya, 1947–49. With a Note on 1950. Singapore: Government Publications Bureau, 1951. 8½". Pp. 272. $5.

[To be reviewed.]

BUSIA (K. A.). Report on a Social Survey of Sekondi–Takoradi. Accra and London: Crown Agents for the Colonies (on behalf of the Government of the Gold Coast), 1950. 8½". Pp. 164. 7*s.* 6*d.*

[To be reviewed.]

COLONIAL OFFICE. Notes on Some Agricultural Development Schemes in Africa. London: Colonial Office, 1951. 13". Pp. 89.

[A roneo-ed account of various experiments and developments in African territories. About half the experiments described are schemes of group farming,

many of them planned to make possible the use of modern methods and mechanical equipment, as in the Rufiji scheme and the Niger agricultural project. Other schemes described, such as one of the Northern Rhodesian schemes, are intended to substitute a permanent settled agriculture for systems of shifting cultivation.]

HAMMOND (R. J.). Food. Vol. I—The Growth of Policy. History of the Second World War; United Kingdom Civil Series. Edited by W. K. Hancock. London: H.M. Stationery Office and Longmans, Green, 1951. 9½″. Pp. xii + 436. 25*s*.

[To be reviewed.]

INTERDEPARTMENTAL COMMITTEE ON SOCIAL AND ECONOMIC RESEARCH. Guides to Official Sources. No. 2—Census Reports of Great Britain 1801–1931. London: H.M. Stationery Office, 1951. 10″. Pp. iv + 118. 3*s*. 6*d*.

[This is likely to prove a valuable work of reference to research workers. It falls into two parts, the first comprising a description of each of the Censuses carried out since 1801, with an account of the changes in scope and method that have been made at different times, and the second an analysis of the material to be found in each Census on a number of particular topics—occupational and age-group distribution, housing, birth-places, infirmity, education, fertility, etc. A useful note is appended on the definition of the various administrative areas for which populations have been given in Census Reports.]

UNION OF SOUTH AFRICA. Fifth Annual Report of the Registrar of Banks for the period ended 31st December, 1950. Pretoria: Government Printer, 1951. 13″. Pp. 38. 2*s*. 6*d*.

UNION OF SOUTH AFRICA. Thirteenth Annual Report of the Registrar of Building Societies for the period ended 31st December, 1950. Pretoria: The Government Printer, 1951. 13″. Pp. 36. 4*s*. 6*d*.

AMERICAN

The New England Economy. A Report to the President transmitting a study initiated by the Council of Economic Advisers and prepared by its Committee on the New England Economy, July 1951. Washington: U.S. Government Printing Office, 1951. 9½″. Pp. xxxvi + 205. 55 cents.

[This is an interesting and valuable study of the problems of adaptation to changing competitive conditions faced by America's oldest industrial region. Outstanding among these problems during the past thirty years has been the relative decline in New England's shoe and textile industries.]

WEINFELD (W.). Income of Physicians, 1929–49. Survey of Current Business. Washington: United States Department of Commerce, 1951. 11½″. Pp. 17. 15 cents.

[This is a sequel to previous enquiries relating to the incomes of dentists and lawyers. It appears that the average income of physicians in independent practice in 1949 was $11,858. Among the most interesting parts of the analysis is that which concerns the regional distribution of physicians' earnings. Earnings were highest in cities of 250,000–500,000; physicians in cities of over a million had lower mean net income than those in any other size of place except those in places with fewer than 2,500 inhabitants.]

FRENCH

CONSEIL D'ÉTAT. Études et Documents. Année 1950. Paris: Imprimerie Nationale, 1950. 10½″. Pp. 183.

[The present volume consists of three parts with an introduction by the Vice-President of the Conseil d'État. Part I contains five studies of various aspects of

the Conseil d'État and Part II the reports on the activities of its sections. Part III consists of two studies on certain historical aspects of the Conseil d'État, and a report of the celebrations in 1950 of the 150th anniversary of its foundation in its modern form.]

YUGOSLAV

MINISTRY FOR FOREIGN TRADE OF YUGOSLAVIA. Board of Statistics. Statistics of Foreign Trade of the FPR Yugoslavia, Year 1950. Belgrade: Ministry for Foreign Trade of Yugoslavia, 1951. 11″. Pp. xiii + 246.

[This publication is now reappearing for the first time under the new régime. Table-headings throughout are given in English as well as Serbo-Croat.]

INTERNATIONAL

Full Employment Objectives in relation to the Problem of European Co-operation. Strasbourg: Council of Europe, 1951. 8½″. Pp. 68.

[To be reviewed.]

INTERNATIONAL TEA COMMITTEE. Bulletin of Statistics, June 1951. London: International Tea Committee, 1951. 12½″. Pp. 52.

INTERNATIONAL TIN STUDY GROUP. Tin, 1950–1951. A Review of the World Tin Industry. The Hague: International Tin Study Group, 1951. 9½″. Pp. 84. 6*s*.

[This well-designed survey deals with consumption, production, stocks and prices of tin in 1950 and the first half of 1951.]

UNITED NATIONS DEPARTMENT OF ECONOMIC AFFAIRS. Economic Survey of Asia and the Far East, 1950. New York: United Nations (London: H.M. Stationery Office), 1951. 9″. Pp. xxiv + 541. 27*s*. 6*d*.

[The little group of economists whom Dr. Lokanathan has gathered together in the ECAFE organisation at Bangkok have become very much the focus of economic thinking in Asia, and their annual report is not only an absolutely essential work of reference for all the statistics of economic development in that part of the world, but also an invaluable appraisal of all current trends. From the year 1950 they derive in retrospect little encouragement and much concern. The balances of payments, it is true, were in general very favourable as contrasted with a generality of unfavourable balances in 1949. But the improvement came almost entirely from the ephemeral effects of the Korean war, and in all other respects the war situation implied a weakening of the whole political and economic basis of Asian development and a slowing down of genuine industrial progress. Dr. Lokanathan, in his letter of transmittal to the Secretary-General of the United Nations, contrasts the superficial prosperity with the grave underlying dangers and " the inherent weaknesses of the economic and financial structures of countries of the region, which are always subject to the vicissitudes of external ' wind and weather ' without the power or means effectively to control them."]

UNITED NATIONS DEPARTMENT OF ECONOMIC AFFAIRS. Problems of Unemployment and Inflation 1950 and 1951. Analysis of replies by governments to a United Nations questionnaire. New York: United Nations (London: H.M. Stationery Office), 1951. 9″. Pp. 173. 9*s*.

[This is a selection of some of the replies sent by different national authorities to a questionnaire circulated by the Secretary-General of the United Nations in 1950 dealing with problems of unemployment and inflation. The individual national statements are preceded by a brief general discussion and anlaysis. The replies printed are those from Canada, France, Sweden, the United Kingdom, the United States, the Soviet Union, Poland and India.]

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